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DEPARTMENT OF REGISTRATION AND EDUCATION
JOHN J. HALLIHAN, *Director*

DIVISION OF THE
STATE GEOLOGICAL SURVEY
M. M. LEIGHTON, *Chief*
URBANA

REPORT OF INVESTIGATIONS — NO. 63

ILLINOIS MINERAL INDUSTRY IN 1939

With Special Discussion of Distribution of Coal in 1937

BY

WALTER H. VOSKUIL AND G. N. OLIVER

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This Report is a Contribution of the Section of Mineral Economics.

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ILLINOIS MINERAL INDUSTRY IN 1939

WITH SPECIAL DISCUSSION OF DISTRIBUTION OF COAL IN 1937

BY

WALTER H. VOSKUIL AND G. N. OLIVER

INTRODUCTION

THE OUTSTANDING characteristic of the Illinois mineral industry in 1939 was the rapid increase in output of petroleum, which has surpassed coal in the value of output. Production in 1939 was four times that in 1938 and 20 times that in 1936, the last year that production was obtained solely from the old southeastern field and other small pools with long histories of production. In 1939 the coal production was larger than the low output of 1938 but it did not reach the level of 1937. The production of construction materials and industrial minerals showed a marked increase over that of the previous year. The agricultural limestone output again exceeded one million tons, and Illinois continues to be the leading state in the application of limestone to the soil.

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COAL IN 1939

PRODUCTION

Coal production in 1939 exceeded the low level of output in 1938 but did not reach the high level of 1937. The outstanding feature of the industry in 1939 was the prolonged suspension of the mining in Appalachian fields beginning April 1, pending the negotiations of a new wage agreement. Suspension of mining activities did not go into effect in Illinois and Indiana until early in May and then only to a limited extent. Prolonged suspension of mining operations in the Appalachian field resulted in shipments of coal from Illinois, Indiana, and western Kentucky to markets in Cleveland, Pittsburgh, Buffalo, New York, and to other smaller market centers. Shipments from Illinois alone to eastern markets are estimated at 1,500,000 tons.

TABLE 1.—SUMMARY OF PRODUCTION AND VALUE OF ILLINOIS MINERALS, 1938–1939

Mineral	1938[a]		1939[c]	
	Amount[b]	Value	Amount[b]	Value
Petroleum (barrels)	24,075,000	$23,000,000	94,302,000	$94,835,500
Coal	41,912,000	62,964,800	46,000,000	73,600,000
Pig iron (gross tons)	1,519,572	30,899,012	2,975,000	60,987,000
Coke	1,734,511	11,706,788	2,600,000	17,720,000
Clay products, including pottery	.....	9,450,784	.....	11,930,290
Cement, Portland (barrels)	4,357,119	5,993,634	4,801,292	7,056,745
Sand and gravel (total)	12,538,469	5,648,601	8,572,589	5,001,758
Structural sand	1,145,318	542,994	1,422,527	603,854
Paving and road-making sand	1,087,239	507,555	821,690	361,564
Glass sand	[d]	[d]	[d]	[d]
Molding sand	359,363	356,799	448,579	498,862
Railroad ballast sand[e]	191,565	51,032	478,739	120,818
Grinding, polishing and blast sand	61,175	184,258	87,686	256,247
Engine sand	38,235	22,501	66,518	33,145
Fire or furnace sand	10,432	16,864	30,532	23,436
Other sands	547,091	647,838	222,671	454,268
Structural gravel	1,159,634	595,249	1,186,117	591,001
Paving and road making gravel[g]	2,781,580	1,169,935	1,543,671	663,439
Railroad ballast gravel[e]	1,166,371	392,166	996,343	388,268
Other gravel	53,692	26,676	784,743	400,284
Limestone (total)	9,775,110	7,487,346	8,898,844	8,155,546
Construction	[d]	[d]	193,178	274,365
Road metal and concrete	6,729,280	5,584,382	6,285,990[f]	5,628,232[f]
Flux	141,780	116,581	186,021	177,828
Railroad ballast	220,130	153,755	210,777	129,520
Riprap	103,100	106,185	83,255[f]	89,633[f]
Rubble	4,160	7,471	6,666	7,896
Agricultural	1,174,986	1,170,900	1,516,048[f]	1,500,000[f]
Other uses	195,760	348,072	420,269	348,072
Natural gasoline (gallons)	2,436,154	123,959	2,004,217	111,981
Natural gas (therms)	758,763	.....	838,650	.....
Lime	135,256	965,836	147,729	1,064,154
Fuller's earth	[d]	[d]	[d]	[d]
Fluorspar (short tons)	35,368	751,227	75,257	1,638,693
Quartz (silica)	66,583	418,881	[d]	[d]
Clay, raw, including that burned at mine or pit	94,770	226,617	686,557	852,459
Tripoli	8,141	117,107	[d]	[d]
Sandstone	[d]	[d]	[d]	[d]
Pyrites	[d]	[d]	.....	.....
Other minerals	315,319	413,964	430,950	731,272
Total value	.....	159,033,832	.....	283,385,398

[a] Final figures.
[b] In tons except as noted.
[c] Preliminary figures.
[d] Included in "Other minerals."
[e] Includes some material used for fills and similar purposes.
[f] Includes both commercial and noncommercial limestone.
[g] Includes commercial gravel only.

Production of coal in the past five years in Illinois and the entire nation is shown in table 2.

TABLE 2.—PRODUCTION OF BITUMINOUS COAL, 1935–1939
(Thousands of tons)

Year	United States	Illinois	Illinois per cent of total
1935	372,373	44,525	12.0
1936	439,088	50,927	11.6
1937	445,531	51,602	11.6
1938	344,630	41,912	11.8
1939[a]	389,025	46,000	11.8

[a] Preliminary figures.

The production of coal from shipping mines, by counties and months, is shown in table 4. This does not represent the entire output of Illinois coal because approximately 12 per cent of Illinois coal output, not included in the above table, is shipped by truck. Table 4 is primarily useful in showing the seasonal trend of coal production.

FREIGHT RATE GROUP DISTRICTS

The coal production from shipping mines, grouped into freight rate districts, is shown in table 3. The districts are those defined by the Coal Producers Board for the State of Illinois and by the U. S. Bituminous Coal Division; they comprise the following counties:

1. Northern Illinois-Atkinson: Will, Grundy, LaSalle, Livingston, Bureau, Henry, Putnam, Marshall, Woodford.
2. Fulton-Peoria: Knox, Fulton, Peoria, Tazewell.
3. Springfield: Logan, Menard, Macon, Sangamon, Christian, Macoupin, Montgomery.

4 to 6. Belleville-DuQuoin: Madison, Bond, Clinton, St. Clair, Randolph, Washington, Perry, Jackson, Mason.

7. Southern Illinois: Jefferson, Franklin, Williamson, Saline, White, Gallatin.
8. Danville: Vermilion.

TABLE 3.—PRODUCTION FROM SHIPPING MINES BY FREIGHT RATE GROUP DISTRICTS, 1939[a, b]
(In net tons)

Northern Illinois-Atkinson	889,944
Fulton-Peoria	4,249,483
Springfield	10,067,607
Belleville-DuQuoin	9,016,332
Southern Illinois	13,807,960
Danville	1,630,255
Other districts	2,259,376
Total	41,920,957

[a] Compiled from Monthly Reports of Coal Production, Illinois State Dept. Mines and Minerals, Springfield, Ill., 1939.
[b] See figure 2.

TABLE 4.—COAL PRODUCTION IN SHIPPING MINES IN

(In net

County	January	February	March	April	May	June
Christian	368,579	343,175	373,461	352,650	224,636	222,532
Clinton	12,820	14,361	8,538	4,219	2,002	2,597
Franklin	996,427	975,980	738,867	674,532	384,550	232,833
Fulton	348,449	319,407	314,165	287,214	158,094	162,255
Jackson	163,149	146,746	137,683	128,960	65,034	81,456
Macoupin	399,200	385,486	399,674	281,502	264,337	232,077
Madison	138,718	154,820	102,830	57,962	87,943	46,030
Peoria	71,478	104,533	100,752	76,969	23,083	48,935
Perry	354,366	327,169	311,276	305,124	152,884	132,993
Randolph	129,805	120,992	128,623	92,873	45,955	52,734
Saline	336,765	327,069	298,269	236,856	309,743	95,643
Sangamon	168,531	190,482	188,359	142,547	108,382	60,628
St. Clair	182,577	168,366	132,907	115,405	94,037	46,356
Vermilion	142,079	186,319	196,328	167,346	70,797	42,340
Williamson	188,310	196,889	162,398	170,286	87,990	84,370
Other counties	441,123	432,068	428,837	332,833	174,731	195,940
Total	4,422,376	4,393,862	4,022,967	3,427,278	2,254,198	1,739,719

[a]From Monthly Reports of Coal Production, Illinois State Dept. Mines and Minerals, Springfield, Illinois.

TABLE 5.—COAL OUTPUT FROM SHIPPING MINES IN ILLINOIS,

(Net

	January	February	March	April	May
Total output, 1938	4,230,976	3,388,278	2,718,782	2,167,039	1,874,332
Total output, 1939	4,442,376	4,393,862	4,022,967	3,427,278	2,254,198
Increase or decrease	+211,400	+1,005,584	+1,304,185	+1,260,239	+379,866
Strip mines, 1938	813,224	745,676	708,556	623,139	509,500
Strip mines, 1939	1,140,491	1,068,689	1,078,995	978,352	523,960
Increase or decrease	+327,267	+323,013	+370,439	+355,213	+14,460
Shaft mines, 1938	3,417,752	2,642,602	2,010,226	1,543,900	1,364,832
Shaft mines, 1939	3,301,885	3,325,173	2,943,972	2,448,926	1,730,238
Increase or decrease	−115,867	+682,571	+933,746	+905,026	+365,406

[a]Compiled from Monthly Reports of Coal Production, Illinois State Dept. Mines and Minerals, Springfield, Illinois.

ILLINOIS, BY COUNTIES AND MONTHS, FOR 1939[a]

tons)

July	August	September	October	November	December	TOTAL	
						1939	1938
264,797	332,400	319,908	422,859	428,690	507,193	4,160,880	3,694,119
3,612	4,940	7,853	13,482	12,465	13,982	100,871	124,864
345,554	624,948	843,896	1,035,931	879,661	845,998	8,579,177	7,895,421
176,411	224,647	272,257	360,286	374,161	365,641	3,362,987	2,566,889
113,235	140,366	153,430	180,979	182,393	141,822	1,635,253	1,117,810
212,432	272,967	273,905	280,896	233,289	197,195	3,432,960	3,274,583
59,844	73,411	143,393	160,158	132,008	137,253	1,294,370	740,293
58,676	74,264	74,008	91,165	82,731	78,802	885,396	935,054
193,107	188,013	218,005	296,041	303,131	318,764	3,100,873	2,893,306
66,091	90,807	98,651	131,888	114,909	128,260	1,201,588	1,039,234
124,553	166,037	322,856	384,351	349,032	351,497	3,302,671	2,768,203
89,209	94,511	96,534	180,721	190,461	246,427	1,756,792	1,315,092
52,364	71,223	111,878	157,757	150,611	163,051	1,446,532	1,514,362
72,725	90,177	110,612	181,161	189,877	180,494	1,630,255	1,328,185
107,173	132,437	157,708	225,961	207,061	205,529	1,926,112	1,681,092
227,796	303,107	271,624	444,608	397,586	453,987	4,104,240	3,954,069
2,167,579	2,884,255	3,476,518	4,548,244	4,228,066	4,335,895	41,920,957	36,842,576

BY MONTHS AND BY TYPES OF MINES, 1938 AND 1939[a]

tons)

June	July	August	September	October	November	December	Total
2,112,508	2,192,384	2,760,098	3,329,526	3,529,802	3,976,278	4,562,573	36,842,576
1,739,719	2,167,579	2,884,255	3,476,518	4,578,244	4,228,066	4,335,895	41,920,957
−372,789	−24,805	+124,157	+146,992	+1,018,442	+251,788	−226,668	+5,078,381
675,038	583,518	811,320	926,400	966,900	1,103,654	1,187,559	9,654,484
517,165	675,227	718,387	888,322	1,108,398	1,021,736	1,084,447	10,804,169
−157,873	+91,719	+92,933	+38,078	+141,498	−81,918	−103,112	+1,149,685
1,437,470	1,608,866	1,948,778	2,403,126	2,562,902	2,872,624	3,375,014	27,188,092
1,222,554	1,492,352	2,165,868	2,588,196	3,439,846	3,206,330	3,251,448	31,116,788
−214,916	−116,514	+217,090	+185,070	+876,944	+333,706	−123,566	+3,928,696

TABLE 7.—ORIGIN AND DESTINATION OF REVENUE RAILROAD SHIPMENTS OF COAL FROM
(Exclusive of non-
(In net

From	Chicago District	Illinois, other[b]	Milwaukee, Wis.	Wisconsin, other	Council Bluffs, Iowa
1938					
Western Pennsylvania	754	42	256	.....	.....
Central Pennsylvania, Somerset-Myersdale, and Cumberland-Piedmont	26,613	4,712	249	8,441	674
Fairmont, W. Va	37,112	4,740	77	2,532	.....
Northern and eastern Ohio	1,404	516	.....	1,267	.....
Southern Ohio	1,052	.....	.....	73	.....
Kanawha, Logan and Kenova-Thacker	801,911	90,458	599	24,485	560
New River-Winding Gulf and Pocahontas-Tug River	4,858,237	350,434	87,509	498,044	.....
Northeast Kentucky and McRoberts	759,917	84,648	600	36,162	.....
Virginia	368,293	47,249	6,670	68,511	.....
Hazard, Harlan and Southern Appalachians	1,628,665	345,450	192	30,442	391
Ex-river coal	.....	1,269	.....	.....	.....
Northern Illinois	525,882	1,930,569	1,231	168,526	48
Central and Southern Illinois	4,137,957	6,441,092	23,311	953,803	22,215
Indiana	2,299,876	1,041,479	79,319	408,480	223
Western Kentucky	536,657	254,391	6,832	139,181	3,630
Grand Total	15,984,330	10,597,049	206,845	2,339,947	27,741
Per cent of change over 1937	−35.5	−15.2	−22.8	−12.3	−45.3
1939					
Western Pennsylvania	1,068	430	31	.....	.....
Central Pennsylvania, Somerset-Myersdale, and Cumberland-Piedmont	14,996	4,202	502	6,789	542
Fairmont, W. Va	54,022	5,039	.....	608	.....
Northern and eastern Ohio	1,154	.....	.....	984	.....
Southern Ohio	445	34	.....	37	.....
Kanawha, Logan and Kenova-Thacker	764,169	92,164	1,172	18,154	469
New River-Winding Gulf and Pocahontas-Tug River	5,996,928	350,402	71,365	504,773	.....
Northeast Kentucky and McRoberts	956,370	88,512	1,200	33,671	24
Virginia	278,183	38,708	3,319	69,742	.....
Hazard, Harlan and Southern Appalachians	2,208,127	367,468	340	32,474	480
Ex-river coal	321	.....	.....	.....	.....
Northern Illinois	669,466	2,363,089	3,151	207,085	441
Central and Southern Illinois	4,417,242	8,231,018	54,291	1,119,251	20,830
Indiana	2,502,353	1,111,287	103,650	401,995	117
Western Kentucky	570,202	241,774	51	131,372	2,628
Grand Total	18,435,046	12,894,127	239,072	2,526,935	25,531
Per cent of change over 1938	+15.3	+21.7	+15.6	+8.0	−8.0

[a]Data from U. S. Bituminous Coal Division, Monthly Coal Distribution Report No. 101, May 29, 1940.
[b]Includes Davenport, Iowa for shipments from Ohio and the Crescent and includes Davenport, Bettendorf, and Iowanna, Iowa for shipments from Illinois, Indiana and Western Kentucky; excludes East St. Louis, Illinois.

Illinois, Indiana, Western Kentucky, and from the Appalachians in 1938 and 1939[a]
revenue railroad fuel)
tons)

Iowa, other	St. Louis, Mo.	Kansas City, Mo.	St. Joseph, Mo.	Missouri, other	Kansas, other	Nebraska, other	Minnesota	South Dakota	North Dakota
				1938					
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
11,371	3,372	948	317	1,574	1,559	1,222	4,689	1,155	.....
1,170	.....	.....	.....	.....	.....	.....	235	34	.....
2,156	.....	.....	.....	.....	.....	.....	317	.....	.....
595	.....	.....	.....	.....	.....	.....	123	.....	.....
170,198	5,463	.....	.....	136,969	13	57	9,263	978	.....
63,658	16,225	.....	.....	104,979	102	.....	109,533	7,651	.....
123,869	5,723	.....	.....	43,083	.....	528	19,024	1,798	.....
7,614	1,131	.....	.....	.....	.....	.....	14,914	1,701	.....
499,755	15,125	.....	.....	1,234	.....	1,118	33,859	3664	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
768,863	42	.....	.....	398	.....	.....	57,463	620	30
1,313,317	2,889,937	781	4,856	692,569	10,595	77,894	365,862	97,026	1,156
403,104	62,536	201	.....	6,085	.....	1,906	105,974	3,593	28
227,051	48,373	.....	218	49,199	.....	7,611	62,714	21,652	4,644
3,593,321	3,047,927	1,930	5,391	1,036,090	12,269	90,336	783,970	139,872	5,858
−15.0	−31.0	−35.5	−60.3	−5.5	−36.5	−26.3	−16.9	−20.0	−4.3
				1939					
36	.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
10,455	3,358	977	218	1,695	1,305	1,170	5,070	1,008	.....
1,442	.....	.....	.....	.....	.....	.....	55	.....	.....
2,363	.....	.....	.....	.....	.....	.....	595	36	.....
341	.....	.....	.....	.....	.....	.....	100	.....	.....
163,389	174,995	.....	.....	521	.....	54	7,245	482	.....
67,163	125,683	122	.....	190	.....	.....	89,531	6,883	.....
120,177	150	.....	.....	797	.....	351	17,518	1,760	.....
10,492	1,881	.....	.....	.....	.....	.....	10,976	1,411	.....
489,748	18,170	.....	.....	808	.....	449	28,045	1,875	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
1,181,515	50	.....	.....	571	.....	42	64,055	554	35
1,202,208	3,453,746	620	5,364	855,379	9,815	74,591	334,716	93,997	885
411,482	62,067	168	35	7,309	48	1,482	81,507	2,323	.....
211,472	37,557	.....	.....	34,702	.....	6,070	53,227	16,990	6,941
3,872,283	3,877,657	1,887	5,617	901,972	11,168	84,209	692,640	127,319	7,861
+7.8	+27.2	−2.2	+4.2	−12.9	−9.0	−6.8	−11.6	−9.0	+34.2

Distribution of Coal in 1939

Coal consumed in the Illinois coal market area is received from northern and southern districts in the Appalachian coal producing district, from Illinois, Indiana, and western Kentucky, and in minor quantities from the coal-producing districts in Iowa, Missouri, Kansas, North Dakota, Arkansas, Wyoming, and Colorado. The principal movements are the all-rail shipments from the Appalachian and Mississippi Valley fields to the Illinois coal market area, lake cargo shipments to upper lake dock territory, and a small tonnage shipped via the Illinois and Mississippi waterways to upper river ports.

The largest shipments of coal come from the Appalachian district, particularly from fields in southern West Virginia and eastern Kentucky, and are delivered both in lake cargo and in all-rail shipments. Coal from these districts supplies, in part, the coking operations in the Chicago district and much of the domestic fuel demand in Chicago and other Lake Michigan ports.

Recorded deliveries of coal other than railroad fuel, and local distribution to states comprising the Illinois coal market area in 1938 and 1939, are shown in table 6.

Detailed data on all-rail coal shipments into the Illinois coal market area are shown in table 7, pages 10 and 11.

Table 6.—Recorded Shipments of Coal into the Illinois Coal Market Area, 1938–1939

(In thousands of tons)

	1938	1939
All-rail shipments[a]	37,873	43,703
Lake cargo shipments[a]	34,172	39,837
River shipments[b]	1,156	2,110
Truck shipments[c]	4,900	5,750
Total	78,101	91,400

[a]U. S. Bur. Mines, Monthly Coal Distribution Reports.
[b]By letter from U. S. Corps of Engineers, Rock Island and Chicago districts.
[c]Estimated.

Origin of Lake Cargo Coal

The high- and low-volatile coal fields of West Virginia and eastern Kentucky continue to dominate the lake trade. Lack of a large local market, and the suitability of these coals for coking purposes and domestic heating account for the heavy shipments. In 1939, there were 39,837,000 tons of coal loaded on vessels in Lake Erie ports[1] of which 10,744,183 tons, or 27 per cent, arrived

[1]For all commercial American docks on Lake Superior and on the west bank of Lake Michigan as far south as Racine and Kenosha.

at destinations on Lake Michigan and Lake Superior. This coal originated in Ohio, Pennsylvania, West Virginia high- and low-volatile coal districts, eastern Kentucky, etc., in the amounts shown in table 8.

TABLE 8.—ORIGIN OF LAKE CARGO COAL, 1938 AND 1939[a]

(In net tons)

From	1938	1939
Eastern Kentucky	6,968,279	7,508,648
Ohio	2,027,389	1,882,183
Pennsylvania	7,742,933	8,780,505
West Virginia	17,044,346	21,216,138
Tennessee	121,478	158,297
Virginia	268,538	291,015
Total	34,172,963	39,836,786

[a]Monthly Coal Distribution Reports; U. S. Bur. Min., and U. S. Bituminous Coal Division.

DISTRIBUTION OF LAKE CARGO COAL

Receipts of coal on upper lake docks for the years 1934 to 1939 are shown in table 9.

TABLE 9.—LAKE CARGO SHIPMENTS AND RECEIPTS OF COAL AT UPPER LAKE DOCKS, 1934–1939[a]

(Thousands of net tons)

Year	Bituminous coal loaded into vessels at Lake Erie ports	Receipts at[b]		Total
		Lake Superior ports	Lake Michigan ports	
1934	34,869	8,023	4,535	12,558
1935	34,730	6,829	4,043	10,872
1936	44,011	9,358	5,114	14,472
1937	43,645	9,115	4,822	13,937
1938	34,173	6,614	3,758	10,372
1939	39,837	6,515	4,229	10,744

[a]Monthly Coal Distribution Reports, U. S. Bureau of Mines and U. S. Bituminous Coal Division.
[b]Covers all commercial docks on Lake Superior and on the west bank of Lake Michigan as far south as Racine and Kenosha; does not include Waukegan and Chicago.

COAL SHIPMENTS ON INLAND WATERWAYS

Coal shipments on the Mississippi and Illinois waterways have increased yearly and to a certain extent have opened for the Illinois coal industry markets previously served by Appalachian coal producers. Shipments since 1937 are shown in table 10.

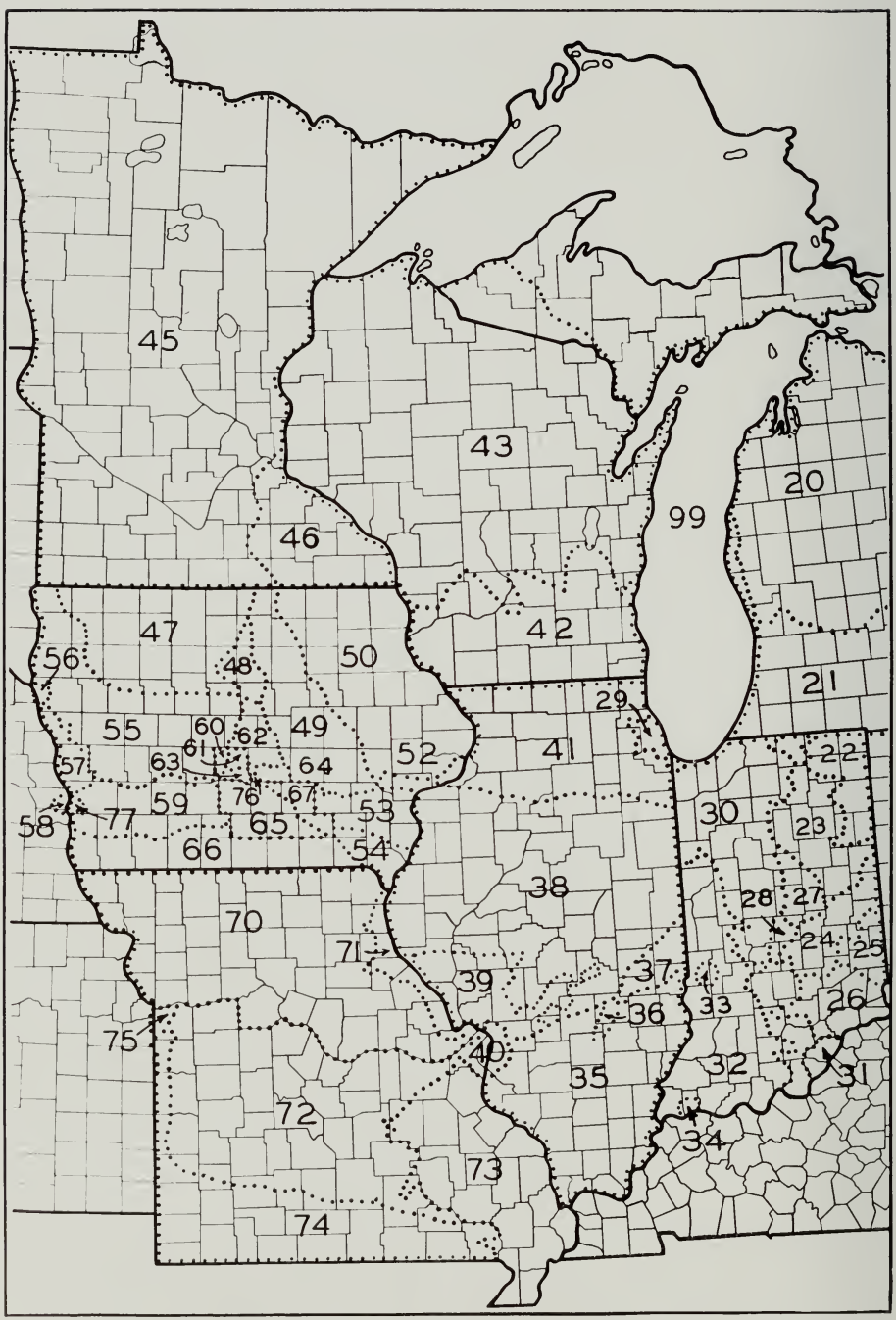


Fig. 1.—Coal Market Areas in the Upper Mississippi Valley, as Designated by the U. S. Bituminous Coal Division.

Table 10.—Coal Shipments on Inland Waterways, 1937–1939[a]

Year	Tons Shipped	
	Mississippi River	Illinois River
1937	89,554	490,862
1938	199,737	956,120
1939	409,624	1,700,000

[a]Data obtained by letter from U. S. Corps of Engineers, Rock Island and Chicago districts.

DISTRIBUTION OF COAL IN THE ILLINOIS COAL MARKET AREA IN 1937

An unusually detailed report[2] of coal distribution from producing fields and districts[3] to market areas[4] within each state was prepared by the Bituminous Coal Division of the U. S. Department of the Interior for the year 1937. This is the first detailed distribution report that has been made since 1929 and may be regarded as representative of the structure of the coal market at the present time.

These distribution reports include data on all-rail shipments, truck shipments, tidewater, lake cargo, and river cargo coal. They also include distribution by sizes and uses of by-product, bunker, and all other coals. The by-product coal includes that used in by-product coke and retort ovens and in water-gas manufacture. Coal used as railway fuel was excluded from these distribution reports inasmuch as it is impossible to allocate coal used as railroad fuel to any particular market area.

Three other reports on coal distribution have been made, all of which lack much of the detail of the 1937 report. The first report of distribution and consumption was issued for the year 1915 by C. E. Lesher, geologist in charge of coal statistics for the U. S. Geological Survey, and was published in the annual report on mineral resources.[5] Two years later a similar report was prepared for the U. S. Fuel Administration.[6] A third survey, for the year 1929, was undertaken by the Coal and Coke Division of the U. S. Bureau of Mines under the direction of the late F. G. Tryon.[7]

[2]All-Rail shipments of bituminous coal exclusive of railroad fuel as reported on forms D-1 and D-3 for calendar year 1937, and realization obtainable thereon from proposed coordinated minimum prices. Interim summaries by market areas—Market Areas 15–75, 153–157. Pt. I, District Nos. 1–8; Pt. II, District Nos. 9–15; U. S. Bituminous Coal Division, Exhibit No. P–502, Pts. I and II, Aug. 13, 1939.

Lake shipments of bituminous coal from ports on Lake Erie to destinations in market Areas Nos. 10, 12, 13, 15, 20, 21, 29, 30, 41, 42, 43, 44, and 45; also to destinations in market area No. 4 west of the Port Maitland Line, calendar year 1937. U. S. Bituminous Coal Division, Exhibit No. P–504, Aug. 15, 1939.

Truck shipments of bituminous coal as reported on forms D–1, D–2 and D–3 for calendar year 1937, and realization obtainable thereon from proposed coordinated minimum prices. Districts 10, 11, 12, 14, and 15—Interim summary—Truck coal: U. S. Bituminous Coal Division, Exhibit No. P–508, Aug. 15, 1939.

Rail shipments inland from the upper lake docks to all market areas, compiled from rail carrier records, 1937: U. S. Bituminous Coal Division, Exhibit No. P–669, Sept. 25, 1939.

[3]As defined in Section IV of the Bituminous Coal Act of 1937.

[4]As outlined by the U. S. Bituminous Coal Division, in Federal Register for May 4, 1939.

[5]U. S. Geol. Survey, Mineral Resources of the United States, 1915, pt. II, pp. 433–513, 1917.

[6]U. S. Geol. Survey, Mineral Resources of the United States, 1917, pt. II, pp. 1203–59, 1920.

[7]Published as mimeographed reports in part of the M. C. D. series of the U. S. Bureau of Mines.

In addition to these annual surveys there is published a monthly coal distribution report which is more restricted in its scope than the annual surveys.

The Bituminous Coal Division survey of 1937 is presented in the form of "Exhibits in the Hearings on Minimum Prices Conducted by the Bituminous Coal Division." (See Exhibits No. P-502, Pts. I and II.)

Analysis of Data in the 1937 Distribution Report

From the distribution data made available in the Bituminous Coal Division report, an analysis is here made of the sources, distribution, and uses of coal in the Illinois coal market area. The major features of this analysis consist of a series of tables showing:

1. All-rail shipments of coal in the area (table 11)
2. Lake cargo shipments of coal (table 12)
3. Shipments of by-product coal (tables 15 and 16)
4. Shipments of low-volatile coal not used for by-product purposes (tables 17 and 18)
5. Shipments of coal on the Illinois and Mississippi rivers (table 10)

From the distribution data presented by the U. S. Bituminous Coal Division, it is possible to define more precisely the boundaries of the Illinois market area and the extent of coal shipments from competing districts into this market area. The Illinois market area, with the subdivisions as outlined and described by the Bituminous Coal Division, is shown in figure 1. Illinois coal, in small quantities, is shipped beyond the boundaries of the area into Arkansas and Louisiana, and into some southern markets east of Mississippi River.

All-rail Coal

Table 11 shows the amount of all-rail coal, exclusive of fuel for railway use, shipped into the Illinois market area in 1937 from Illinois and competing fields. Of a total of 78,912,411 tons, Illinois supplied 25,662,111 tons, or approximately 33 per cent. Only small shipments from Illinois to Indiana are to be expected in view of the abundant supplies of coal in Indiana and the nearness of Appalachian coal fields. The large proportion of shipments from Illinois to Wisconsin and Minnesota show that the Illinois coal mining industry is in a strong position in competition with rail-borne coal from other producing districts in these market areas. These states, however, receive the bulk of their coal needs from lake docks so that the actual contribution of Illinois coal is rather low. In Iowa, Illinois coal competes with coal from Appalachian fields shipped to this destination by all-rail and by lake cargo, and with coal produced locally.

TABLE 11.—ALL-RAIL SHIPMENTS OF ILLINOIS AND OTHER COAL INTO STATES AND MARKET AREAS IN THE ILLINOIS COAL MARKET AREA IN 1937 [a, b]
(In net tons)

To state or market area (See fig. 1)		Source of Coal		Total	Illinois per cent
Name	No.	Illinois	All other coal producing states		
Indiana	30	472,820	6,616,756	7,089,576	6.6
Indiana, other	..	171,616	8,297,107	8,468,723	2.0
Chicago, Ill	29	7,492,846	10,653,981	18,146,827	41.3
St. Louis, Mo	40	4,367,216	490,989	4,858,205	88.2
Illinois, other	..	8,289,650	3,227,145	11,516,795	72.0
Wisconsin	42	1,100,093	1,070,066	2,170,159	50.6
Wisconsin	43	247,202	396,238	643,440	38.4
Michigan	44	2,065	70,934	72,999	2.8
Minnesota (St. Paul-Minneapolis)	46	391,259	369,081	760,340	51.4
Minnesota (Northwest)	45	173,508	74,537	248,045	69.9
Iowa, all	..	1,747,601	2,703,668	4,451,269	39.2
Missouri, other	..	857,907	2,521,261	3,379,168	25.4
Dakotas	..	124,786	378,520	503,306	24.7
Nebraska (including Omaha 58)	..	151,225	2,053,170	2,204,395	6.8
Other shipments (including Ark., La., Ohio, Kan., Okla., Texas)	..	72,317	14,327,847	14,400,164	.5
Total		25,662,111	53,251,300	78,913,411	40.0

[a] U. S. Bituminous Coal Division, General Docket No. 15, Exhibit No. P-613, 1939.
[b] For detailed distribution data, by market areas, see table 1 in the Appendix, p. 52.

LAKE CARGO COAL

The principal market for lake cargo coal is among industries and public utilities located at lake dock ports. They use nearly 70 per cent of the coal that reaches docks on Lake Michigan and Lake Superior, and only 30 per cent is transshipped by rail into interior points. The quantity of coal received at lake ports in 1937 and the disposition of this coal is shown in tables 12 and 13.

The estimates of amounts transshipped by rail from lake dock ports to interior destinations in 1937 have been made by the Bituminous Coal Division and the data gathered by the Division are presented in summary form in table 13.

A comparison of tables 12 and 13 shows that 6,744,652 tons are accounted for as being shipped by railroads to interior points in the market areas designated, leaving a total of 16,104,835 tons which are consumed by industries receiving coal directly from vessels, by consumers within truckng distance of the docks, and by railroads. Nearly 88 per cent of rail shipments are destined to points in Wisconsin, Upper Michigan Peninsula, and Minnesota.

With these data, table 14 has been prepared showing the position of the Illinois coal industry in the market districts comprising the Upper Mississippi Valley. Coal used as railroad fuel and the coal consumed in the dock ports of Wisconsin and Minnesota are not included in these figures.

TABLE 12.—LAKE CARGO COAL SHIPPED INTO THE ILLINOIS COAL MARKET AREA, INCLUDING MICHIGAN PORTS ON LAKE MICHIGAN AND LAKE SUPERIOR, 1937[a]

Receiving port or market area	Market area No. (See fig. 1)	Tons
Michigan City, Ind.	30	2,056
Chicago	29	4,364,718
Waukegan	41	184,717
Milwaukee, Racine, and Kenosha	42	3,812,971
Northern Wisconsin	43	3,177,743
Upper Michigan	44	1,895,918
Duluth district	45	9,411,364
Total		22,849,487

[a] U. S. Bituminous Coal Division, Research Section, Exhibit No. P-504, Sept. 1, 1939.

TABLE 13.—COAL SHIPPED BY RAIL FROM UPPER LAKE DOCKS TO INLAND DESTINATIONS, 1937[a]

To state or market area	Market area No. (See fig. 1)	Tons
Indiana	30	360
Chicago	29	383
Illinois	41	58,973
Wisconsin	42	421,385
Wisconsin	43	1,381,208
Upper Michigan	44	132,181
Minnesota	46	2,303,420
Minnesota	45	1,602,790
Iowa		107,992
Dakotas		710,332
Nebraska		15,647
All other		9,981
Total shipped by rail		6,744,652
Total received at docks		22,849,487
Marketed in lake ports		16,104,835

[a] U. S. Bituminous Coal Division, Exhibit No. P-669, Sept. 25, 1939.

TABLE 14.—ALL-RAIL SHIPMENTS AND TRANSSHIPPED RAIL SHIPMENTS OF ILLINOIS AND OTHER COAL INTO MARKET AREAS COMPRISING THE UPPER MISSISSIPPI VALLEY, 1937[a]

(In net tons)

To state or market area (See fig. 1)		Type of Coal Shipments				Illinois per cent
Name	No.	From Illinois	Total, all-rail	Lake cargo	Total, Rail and lake	
Indiana	30	472,820	7,089,576	2,056	7,091,632[b]	6.6
Indiana, all other	..	171,616	8,468,723	.....	8,468,723	2.0
Chicago, Ill	29	7,492,846	18,146,827	4,364,718	22,510,545[b]	33.2
St. Louis, Mo	40	4,367,216	4,858,205	.....	4,858,205	88.2
Illinois, all other	..	8,289,650	11,516,795	58,973	11,575,768	71.6
Wisconsin	42	1,100,093	2,170,159	421,385	2,591,544	42.4
Wisconsin	43	247,202	643,440	1,381,208	2,024,648	12.2
Michigan, Upper	44	2,065	72,999	132,181	205,180	1.0
Minn. (St. Paul-Minneapolis)	46	391,259	760,340	2,303,420[c]	3,063,760	12.7
Minnesota (Northwest)	45	173,508	248,045	1,602,790	1,850,835	9.3
Iowa	..	1,747,601	4,451,269	107,992	4,559,261	38.3
Missouri, all other	..	857,907	3,379,168	.....	3,379,168	25.4
Dakotas	..	124,786	503,306	710,332	1,213,638	10.2
Nebraska, (including Omaha 58)	..	151,225	2,204,395	15,647	2,220,042	6.8
Other (Ark., La., Ohio, Kan., Okla., Texas)	....	72,317	14,400,164	9,981	14,410,145	.5
Total	....	25,662,111	78,913,411	11,110,683	90,023,094	28.5

[a]All-rail shipments of bituminous coal, exclusive of railroad fuel; U. S. Bituminous Coal Division, General Docket No. 15, Exhibit No. P-502, pt. II, 1939.

[b]Includes some lake cargo coal used as railroad fuel.

[c]Rail shipments inland from Upper Lake Docks: U. S. Bituminous Coal Division, General Docket No. 15, Exhibit No. P-669, 1939.

SHIPMENTS OF SPECIAL TYPES OF COAL

Two special purpose coals worthy of note are shipped into the Illinois coal market area in large amounts, namely, the by-product coals and the low-volatile coal used for other than by-product purposes. The former group fills a need that cannot be supplied by Illinois coal, hence is not competitive. The latter group is used extensively for domestic heating and so competes with coal from Illinois in those market areas to which transportation costs are about equal. It is in this market that the Illinois coal industry must seek to enlarge its opportunities by better preparation of its product.

BY-PRODUCT COAL[8]

Coal for by-product uses is produced in a relatively restricted area mainly among the Appalachian coal districts. Sources of by-product coal in 1937, by districts, are shown in table 15.

[8]By-product coal, as the term is here used, is defined by the Bituminous Coal Division as coal used for coke and retort ovens and for water-gas manufacture.

Table 15.—Shipments of By-Product Coal, by Producing Districts, 1937[a]

Producing district	Location	Tons shipped
1	Central Pennsylvania	1,572,470
2	Western Pennsylvania	6,335,803
3	Northern West Virginia	1,694,473
7	Southeastern West Virginia	12,666,154
8	Southeastern West Virginia and eastern Kentucky	12,023,249
10	Illinois	113,886
13	Alabama	358,199
	Total	34,764,234

[a]All-rail shipments of bitumonous coal: U. S. Bituminous Coal Division, General Docket No. 15, Exhibit No. 502, pt. 1, 1939.

By-product coal from Districts 1, 2, and 3 is consumed mainly in the steel centers located in Pennsylvania, western New York, eastern Ohio, and Maryland. In addition to this principal disposition of by-product coal from Pennsylvania and northern West Virginia, smaller quantities are shipped over the lakes and to tidewater.

Districts 7 and 8 are the principal producers of by-product coal and also the principal long-distance shippers. Nearly 7 million tons were shipped in the lake cargo trade, 6 million tons to tidewater ports, and 6½ million tons to market destinations in the Illinois coal market area. Somewhat more than 2 million tons is shipped by all-rail haul to consuming market areas in eastern states.

All-rail shipments of by-product coal into the Illinois coal market area are shown in table 16. Principal consuming markets are Areas 30 (central Illinois) and 29 (the Chicago district).

In addition to the all-rail by-product coal shipped to these market areas, an additional tonnage is received at lake ports. The exact quantity of this type of coal cannot be ascertained from the data available. It is known that 8,618,234 tons were shipped through Lake Erie ports to both American and Canadian destinations on Lakes Huron, Michigan, and Superior, but data on the tonnage to each port are not available.

Low-volatile Coal

The Illinois coal market area imported in 1937 approximately 7 million tons of low-volatile coal by all-rail shipments, as well as an additional but undetermined quantity of lake cargo coal, exclusive of low-volatile coal used for by-product purposes. Practically all of this coal originated in producing district No. 7 (southeastern West Virginia) and in all probability entered mainly into the domestic fuel market. The quantities shipped by all-rail, the sources, and the market destinations are shown in table 17.

TABLE 16.—ALL-RAIL SHIPMENTS OF BY-PRODUCT COAL INTO STATES AND MARKET AREAS IN THE ILLINOIS COAL MARKET AREA IN 1937[a]

(In net tons)

To state or market area[b] (See fig. 1)		Source		Total
Name	No.	District 7	District 8	
Indiana	30	2,219,802	1,790,942	4,010,744
Indiana, all other	..	321,510	409,040	730,550
Chicago, Ill	29	309,397	652,237	961,634
St. Louis, Mo	40	100,151	197,284	297,435
Illinois, all other	..	551,636	175,423	727,059
Wisconsin	..	.....	2,432	2,432
Minnesota	..	.....	443	443
Iowa	..	.....	13,269	13,269
Total	.....	3,502,496	3,241,070	6,743,566

[a]U. S. Bituminous Coal Division, Exhibits P-502, pts. I and II; P-144 and P-202, 1939.
[b]For detailed distribution by market areas, see Appendix, table 1, p. 52.

TABLE 17.—ALL-RAIL SHIPMENTS OF LOW-VOLATILE BITUMINOUS COAL, OTHER THAN BY-PRODUCT COAL, INTO THE ILLINOIS COAL MARKET AREA IN 1937[a, b]

(In net tons)

To state or market area (See fig. 1)		Source		Total
Name	No.	Dist. No. 7	Dist. No. 8	
Indiana	30	255,499	16,655	272,154
Indiana, all other	..	601,321	23,676	624,997
Chicago, Ill	29	4,500,647	138,054	4,638,701
St. Louis, Mo.	40	34,152	1,428	35,580
Illinois, all other	..	505,863	16,304	522,167
Wisconsin	42	423,744	10,423	434,167
Wisconsin	43	214,975	5,553	220,528
Michigan, upper	44	33,725	572	34,297
Minn. (St. Paul-Minneapolis)	46	98,442	7,039	105,481
Minn. (Northwest)	45	10,642	392	11,034
Iowa	..	66,402	8,857	75,259
Missouri, all other	..	230	230	460
Dakotas	..	12,218	230	12,448
Nebraska (including Omaha 58)	..	30	.....	30
Total	.....	6,757,890	229,413	6,987,303

[a]U. S. Bituminous Coal Division, Exhibits Nos. P-502, P-613, 1939.
[b]For detailed distribution of low-volatile bituminous coal, see Appendix, table 1 (lines 7L and 8L) p. 52.

In addition to the quantity shipped by all-rail haul, about 5 million tons were shipped over the lakes to both American and Canadian destinations on Lakes Huron, Michigan, and Superior. Detailed distribution of this tonnage by receiving ports cannot be ascertained.

Table 18.—Lake Cargo Shipments of Low-volatile Bituminous Coal for Other than By-product Purposes, 1937[a]

(In net tons)

Port of loading	District		Total
	No. 7	No. 8	
Toledo	3,212,447	38,591	3,251,038
Sandusky	1,829,607	.....	1,829,607
Total	5,042,054	38,591	5,080,645

[a]U. S. Bituminous Coal Division, Exhibit No. P-148, 1939.

The principal competition of low-volatile coal is in the Chicago district, followed by competition in the Wisconsin marketing districts. A substantial quantity also is shipped into the Minneapolis-St. Paul district.

Freight Rates

Low-volatile coal is shipped into the Illinois coal market area at freight rates ranging from $1.20 to $4.00 more than freight rates on coal from Illinois. This margin in freight rates represents the cost factor within which Illinois coal must improve its coal for domestic use in order to compete in this market.

Table 2 (Appendix) shows freight rates from mines in the Pocahontas field, low-volatile coal district No. 7, and freight rates from representative Illinois mining districts to a selected destination in each of the market areas.

Summary of Competitive Relationships in the Illinois Coal Market Area

Tables 1 to 18 present a general summary of the quantity of coal consumed in the Illinois coal market area, the relative importance of general consuming market areas, the major source of coal, and the special types of fuels used. Within this highly competitive area outlined above, the Illinois coal industry finds its present outlet and its hope for a larger share of the market in the future. Whether this market can be enlarged depends upon a program of preparing Illinois coals to a higher degree of efficiency than has been done heretofore and by taking advantage of transportation facilities on the inland waterways that are now available.

STRUCTURE OF THE ILLINOIS COAL INDUSTRY

Introduction

The market for Illinois coal is affected by location of mines, types of mining, methods of transportation, character of the product, and purposes for which the coal is used. Before entering into a detailed analysis of the Illinois coal market and its problem, a brief survey will be made of the structure of the Illinois coal industry.

Production[9]

The coal producing districts of Illinois, grouped according to "freight rate group districts" as defined by the Bituminous Coal Producers Board for District No. 10, are eight in number, designated as follows:

1. Northern Illinois-Atkinson
2. Fulton-Peoria
3. Springfield
4. Belleville
5. Centralia
6. Duquoin
7. Southern Illinois
8. Danville

In general, mines within each of these freight rate groups bear identical freight rates to common consuming market areas. This grouping is therefore useful in the analysis of market outlets for coal from each of these districts. Figure 2 shows the location and outline of the freight rate districts.

Types of Mines

Types of mines have an important bearing on marketing practices and transportation methods in the Illinois coal industry. The three types of mines that are of especial significance are the large shaft mines and the strip mines (these two comprising the so-called shipping mines), and the local mines. The local mines dispose of their product by truck transportation only and have a more limited market radius than the shipping mines.

Production from each of these types of mines in 1937 is shown in table 19.

Table 19.—Production of Illinois Coal, by Types of Mines, 1937[a]

Type	Number	Output (tons)	Per cent
Shipping mines:			
Shaft mines	373	36,336,206	70.3
Strip mines	99	11,725,870	21.3
Local mines	548	4,370,179	8.4
Total	1,020	52,432,255	

[a] Illinois Dept. Mines and Minerals, Coal Report 1937, p. 38, 1938.

[9] Data for 1937 are used in order that distribution date may be comparable throughout this report.

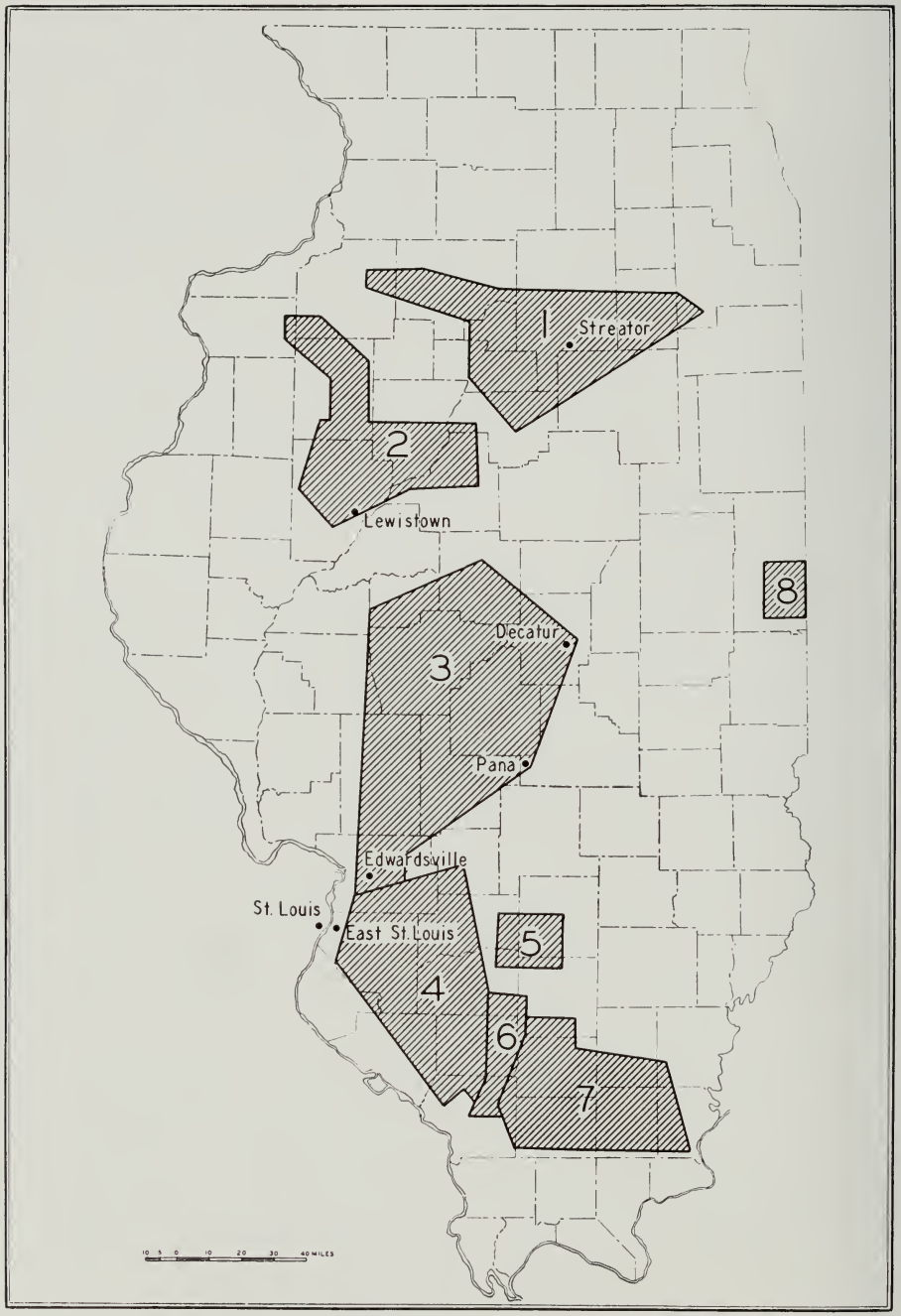


FIG. 2.—Freight Rate Districts in Illinois, as Designated by the U. S. Bituminous Coal Division.

The contribution of strip mines is increasing each year and will probably continue to do so for a number of years in the future, although these mines are not likely to exceed 30 per cent of the total output when their maximum development is reached. Costs of production from strip mines is somewhat lower than the average for shaft mines.

Output of local mines is increasing annually and is particularly important in the Belleville district, the Fulton-Peoria district, and the Danville district. Since the development of this group of mines is dependent upon truck transportation, factors that affect the regulation of this type of transportation are of interest to the operators of these mines.

Distribution of Illinois Coal

Illinois coal is shipped to consuming markets by all-rail haul, by truck, and by river transportation. The all-rail haul of Illinois coal, exclusive of coal used as railway fuel, is shown in table 21. The total recorded for 1937 is 25,662,111 tons.

The total recorded quantity of coal shipped by truck in 1937 was 6,430,262 tons from ten sections in the State outlined by the U. S. Bituminous Coal Division and shown in figure 3. The quantities shipped from each section, from mines with and without rail connections, are shown in table 20.

Table 20.—Coal Shipped by Truck from Illinois Mines in 1937[a]
(In net tons)

Section	From mines with railroad connections	From mines without railroad connections	Total
1	161,284	235,865	397,149
2	337,914	47,341	385,255
3	42,129	277,640	319,769
4	254,221	580,861	835,082
5	107,352	74,787	182,139
6	555,797	519,527	1,075,324
7	95,541	181,187	276,628
8	1,416,416	563,756	1,980,172
9	379,810	182,645	580,455
10	105,828	311,161	416,989
Total	3,456,292	2,974,770	6,431,062

[a]U. S. Bituminous Coal Division, General Docket No. 15, Exhibit P-508, 1939.

The data presented in table 20, although showing origin only, disclose certain significant characteristics of the coal trucking industry. Mines with rail facilities avail themselves of this means of transportation. Their contribution is, in fact, more than half of the total shipped by truck. Truck transportation has developed most extensively in the St. Louis market, with the Peoria market area ranking second. Truck transportation into the Chicago district is insignificant.

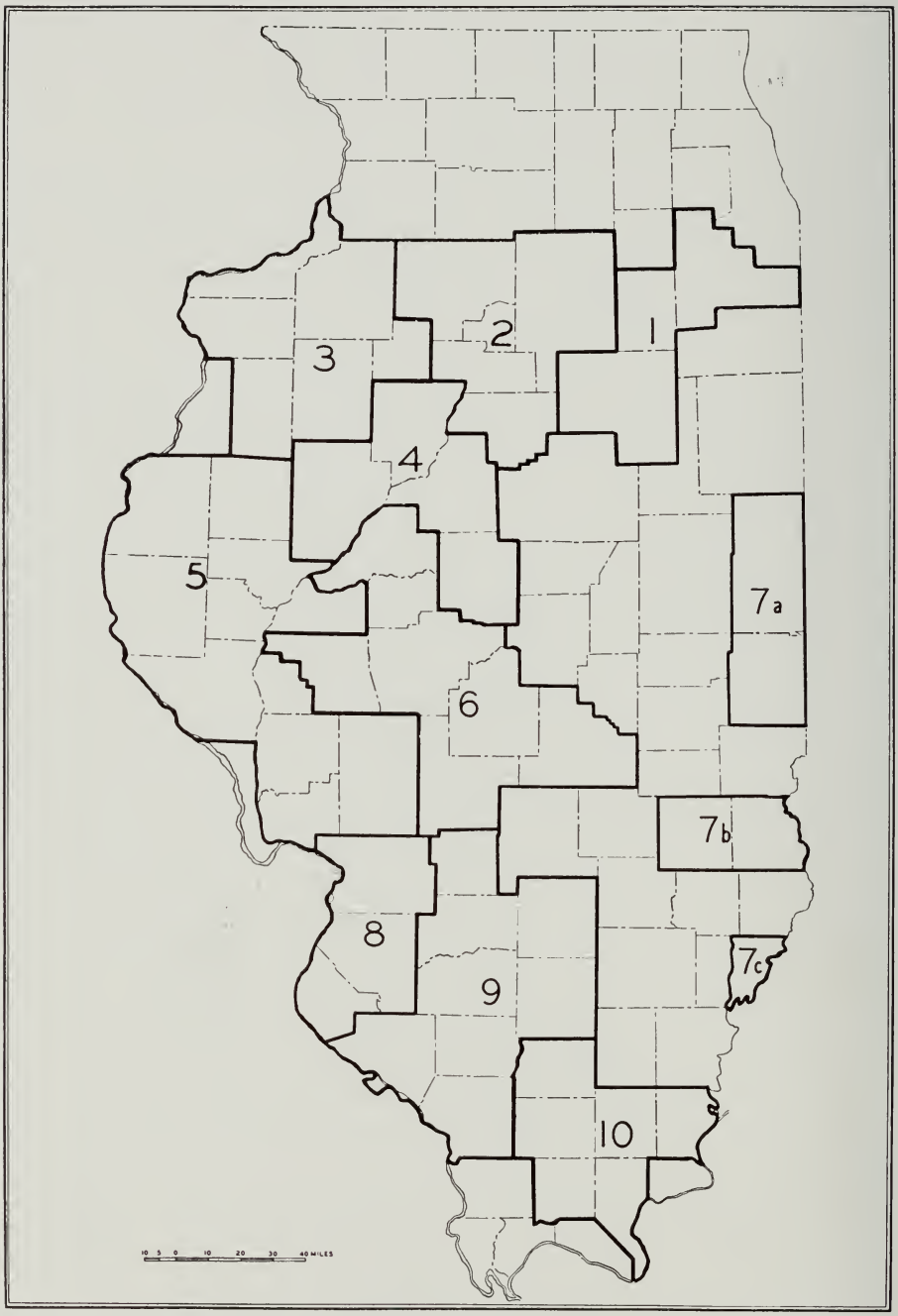


FIG. 3.—Truck-Shipment Sections in Illinois, as Designated by the U. S. Bituminous Coal Division.

River Transportation of Illinois Coal

The transportation of Illinois coal by barge on the Illinois and Upper Mississippi waterway is of recent origin but is developing rather rapidly. Both of these waterways are canalized to provide a navigation channel nine feet deep. The waterways are provided with locks 600 feet long and 110 feet wide.

Relationship of the Waterways to Coal Producing Districts and to Coal Markets

Coal from Illinois coal-producing districts can be delivered to river ports at freight rates ranging from 60 cents to $1.10 a ton from principal mines in southern Illinois. Higher freight rates are in effect for the Danville district and for some of the northern Illinois fields to river ports but it is unlikely that these districts will participate in markets for river-borne coal. In figure 4 are shown rates from representative coal producing districts to important coal loading ports on the Illinois and Mississippi rivers.

Rates on the river have not been established for all points from ports of origin to destination, and in most cases carrying charges are a matter of contract between shipper and carrier. Certain rates or carrying costs are available, however, as an indicator of river transportation costs. On Mississippi River, the Federal Barge Lines have established rates of $1.70 on lump coal and $1.40 on screenings from Alton and East St. Louis to St. Paul, and a rate of $1.85 and $1.55 respectively to Minneapolis. On Illinois River coal is carried from mines to Chicago at an overall delivered rate 65 cents below the all-rail rate from the same mine-origin groups to the Chicago market.

The River Markets

The markets for river-borne coal on each of these two waterways have distinct characteristics which require brief discussion in order to clarify their relationships to the Illinois coal producing districts.

The principal destination of coal carried on Illinois River is the city of Chicago, and the largest single group of consumers is the electric utilities. Coal for this group of consumers originates in the mines at Springfield and Taylorville and is shipped to the river port of Havana for transfer to river barges.

In addition to the coal carried by river to public utility consumers, shipments are also being made from mines in Fulton County to loading docks near Liverpool for shipment to the Marquette cement plant at LaSalle and to a coal distributor in Chicago.

Transportation rates on the Illinois waterway as compared with all-rail rates are reported by the Illinois River Carriers Association as follows:[10]

[10]In the matter of establishment of minimum prices and marketing rules and regulations: U. S. Bituminous Coal Division, General Docket No. 15, In re: Hearing in the matter of the establishment of minimum prices for the coals produced in district No. 10. Protest of the Illinois River Carriers Association, Exhibit No. P–2, July 22, 1939.

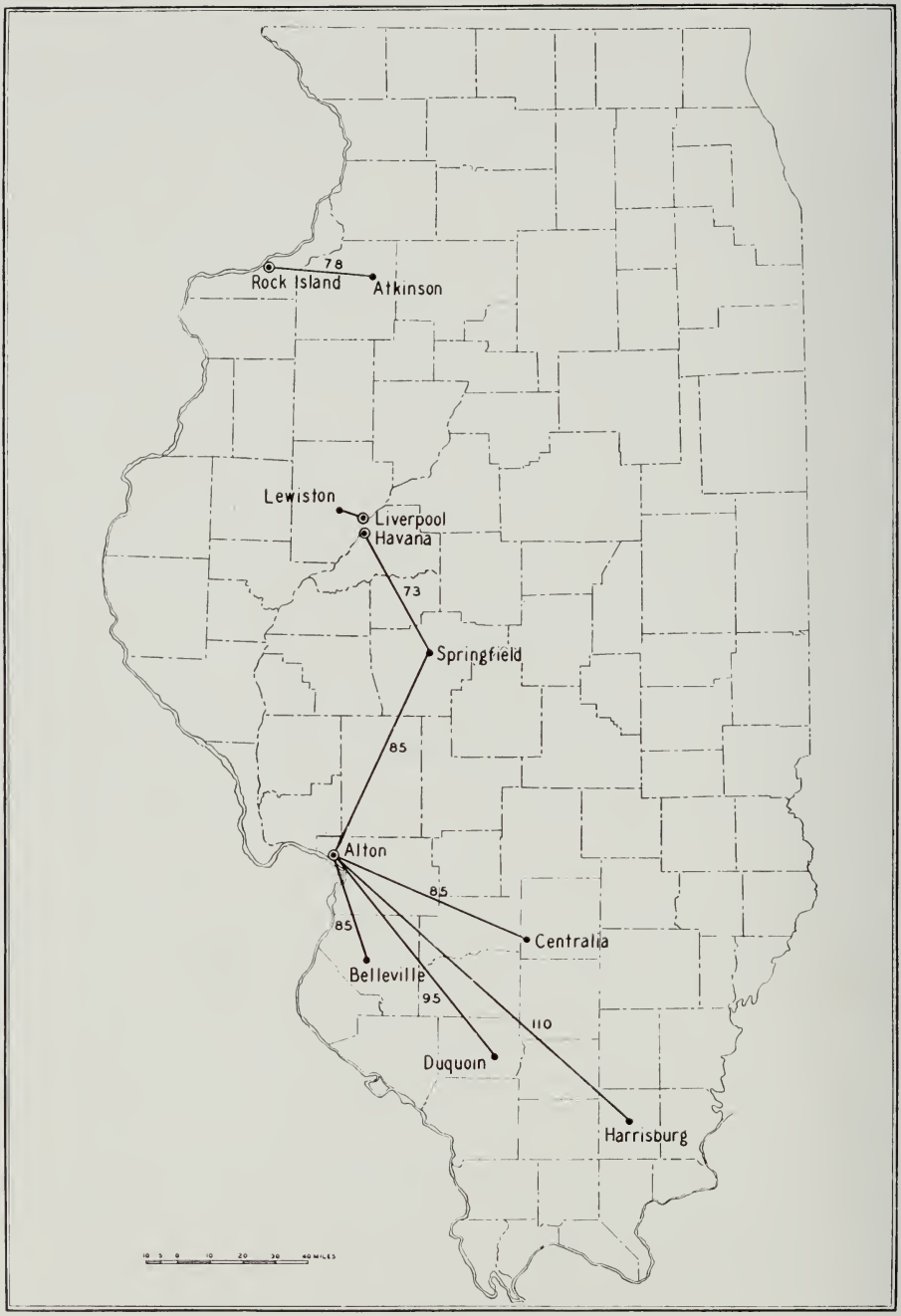


FIG. 4.—Rail Freight Rates from Illinois Coal Districts to River Ports, in Cents Per Ton

From Central Illinois and Fulton County to Chicago, per ton

Central Illinois:		Fulton County:	
All-rail rate	$1.75	All-rail rate	$1.65
Rail-and-river rate	1.35	Rail-and-river rate	1.15

Shipments on the Illinois waterway since 1936 have been as follows:[11]

1936	1,996 tons	1938	956,120 tons
1937	490,862 tons	1939	1,700,000 tons

Mississippi River Transportation

Transportation of coal from Illinois coal districts to markets on the Upper Mississippi waterway has an effect beyond the substitution of water for rail transportation. It opens up possibilities of a displacement of part of the lake-borne-coal market in St. Paul and Minneapolis by coal from Illinois. The small portion of the coal market in market area 46 (which includes St. Paul and Minneapolis) now shared by Illinois producers is shown by distribution data in 1937 (Appendix table 1). In that year the reported shipments to this district, exclusive of railway fuel, were as follows:

All-rail	Tons
From Illinois	391,259
From other sources	369,081
From all all-rail sources	760,340
From lake docks	2,303,420
Total	3,063,760

In addition to this a total of 87,554 tons of coal was carried on the Mississippi waterway above St. Louis, some of which may have reached market area 46.

Transportation charges from Southern Illinois to market area 46 are reported as follows:[12]

From Southern Illinois mines:	Per ton
Steam sizes:	
All-rail rate	$3.32
Rail-and-river rate (via Alton or East St. Louis)	2.50
Domestic sizes:	
All-rail rate	3.60
Rail-and-river rate (via Alton or East St. Louis)	2.70
From Kanawha River:	
Combination of rail-lake-river rate	5.55
All-water rate	3.50

[11]Letter from U. S. Corps of Engineers, Chicago, Ill., by Major S. N. Kerrick, dated Nov. 27, 1939.

[12]In the matter of establishing minimum prices and marketing rules and regulations: U. S. Bituminous Coal Division, General Docket No. 15. In re: Hearing in the matter of the establishment of minimum prices for the coal produced in districts Nos. 8 and 10. Protest of the Central Barge Company, p. 2, July 22, 1939.

Coal movements on the Upper Mississippi waterway since 1937 have been as follows:[13]

Year	Tonnage
1937	89,554
1938	199,737
1939	409,624

Sizes of Coal Shipped from Illinois Mines in 1937

In the report of bituminous coal distribution for 1937, the National Bituminous Coal Commission obtained detailed statistical data on shipments of coal, by sizes. Mines in the State of Illinois (producing district No. 10) ship 27 sizes. Seven sizes, with shipments exceeding one million tons, account for 80 per cent of all rail shipments. The distribution of sizes in the more important Illinois coal markets is shown in table 21.

Table 21.—All-rail Shipments of Illinois Coal, by Sizes and by Principal Markets, 1937[a]

(In net tons)

Sizes[b]	To all markets	To Chicago (Dist. 29)	To St. Louis (Dist. 40)	Central Illinois (Dist. 38)	Northern Illinois (Dist. 41)	Southern Wisconsin (Dist. 42)
1	2,556,747	295,217	669,302	613,791	324,817	7,858
2	427,494	9,454	178,842	31,198	77,508	8,937
3	2,697,247	606,112	496,090	204,766	380,675	125,097
4	377,011	177,151	45,880	93,095	20,585	7,655
5	1,640,363	398,593	293,451	202,657	216,226	106,504
6	1,373,532	871,953	49,332	248,177	51,947	2,193
7	536,514	42,205	218,644	20,606	106,137	417
8	748,752	73,410	77,793	103,241	90,665	26,861
9	28,795	9,855	3,787	754	4,547	3,034
10	251,341	111,295	13,309	9,332	46,269	29,598
11	230,585	96,935	15,680	23,499	45,645	9,445
12	53,556	13,571	22,345	2,126	8,356	1,310
13	2,011,479	863,891	478,487	307,865	85,875	12,230
14	6,607,892	2,268,109	683,623	1,517,018	819,143	304,895
15	773,440	90,585	140,917	39,586	85,995	165,473
16	231,375	61,625	17,459	151	96,407	1,783
18	145,608	55,689	11,644	9,937	15,209	7,237
19	85,506	28,389	1,589	8,026	20,981	18,806
20	59,936	28,607	5,733	6,380	6,739	1,120
21	98,961	7,900	15,745	12,647	19,845	3,904
22	84,305	21,306	11,807	7,726	8,768	3,293
23	3,583,640	1,023,904	769,993	223,343	760,547	160,095
24	202,845	63,516	63,028	5,688	31,351	14,995
25	53,404	13,078	493	925	2,294	20,367
26	785,929	259,844	46,151	36,030	218,165	48,322
27	56,559	292	10,676	2,494	25,712	8,664
34	26,727	.....	25,416	.....	134	.....
Total	25,729,543	7,492,486	4,367,216	3,731,058	3,570,542	1,100,093

[a] All-rail shipments of bituminous coal: U. S. Bituminous Coal Division, General Docket No. 15, Exhibit P-502, pt. II, 1939.

[b] For description of size groups, see Appendix, table 3, p. 56.

[13] War Department, U. S. Corps of Engineers, Rock Island, Illinois, Letter of Nov. 29, 1939, by A. G. Matthews, Captain, Corps of Engineers.

PETROLEUM

From a minor position in 1936, Illinois rose to fourth place among the states in the production of oil in 1939. The record of growth in the past 5 years is shown in table 22.

TABLE 22.—PRODUCTION OF OIL IN THE UNITED STATES AND IN ILLINOIS, 1935–1939[a]

(Thousands of barrels)

Year	Production		Illinois oil Per cent
	United States	Illinois	
1935	996,596	4,322	0.44
1936	1,099,687	4,475	0.41
1937	1,299,160	7,499	0.59
1938	1,214,355	24,075	1.98
1939	1,264,256	94,302	7.47

[a]U. S. Bur. Mines, Monthly Petroleum Statements.

The revival of an oil industry in southern Illinois has made available an added annual supply of 20 million barrels in 1938 and 90 million barrels in 1939 more than the amount contributed by Illinois fields in 1936. This added new supply near the refineries of the Central Refining district has naturally affected oil producing districts in Oklahoma and Kansas, which formerly supplied most of the oil processed by refineries in this district, principally those located in the Chicago and East St. Louis districts. Due to the rapid expansion of oil output in the Illinois basin and consequently inadequate pipeline facilities, transportation problems also arose. Oil was sold below posted prices, mainly by producers dependent upon tank car or tank truck transportation for their oil output. These adverse conditions are gradually being overcome so that prices for oil are becoming less subject to distress marketing conditions.

Apart from the local congestion of oil supply resulting from too rapid development, the market for Illinois oil is affected by the relation of oil supply and demand for the entire country.

SUPPLY AND DEMAND

The annual supply of liquid fuels is obtained from domestic crude oil production, imports, gasoline recovered from natural gas, polymerized gasoline and benzol from coke-oven plants. The major source of supply is from domestic crude oil production.

The principal demand for oil products is for motor fuel, followed by heating oils, industrial fuel oil, railroad fuel, and bunker fuel.

The relation between supply and demand of oils each year is shown in the increase or decrease in stocks of crude oil and principal refined products.

The new supply of oil from all sources in 1938 and 1939 is shown in table 23.

TABLE 23.—NEW SUPPLY OF OILS FROM ALL SOURCES IN THE UNITED STATES IN 1938 AND 1939[a]
(Thousands of barrels)

	1938	1939
Domestic production:		
Crude petroleum	1,214,355	1,264,256
Natural gasoline	51,347	49,896
Benzol	1,764	2,440
Imports:		
Crude petroleum	26,412	33,095
Refined products	27,896	25,804
Gross total, new supply	1,321,774	1,375,491
Less exports of:		
Crude petroleum	77,254	72,073
Refined products	166,633	116,909
Net new domestic supply	1,077,887	1,186,509

[a]U. S. Bur. Mines, Monthly Petroleum Statements.

The demand for crude oil is measured by runs-to-stills, exports, crude used directly as fuel, and losses. These are shown for 1938 and 1939 in table 24.

TABLE 24.—CRUDE OIL DEMAND IN 1938 AND 1939[a]
(Thousands of barrels)

	1938	1939
Runs-to-stills	1,165,015	1,237,840
Exports	77,254	72,053
Fuel and losses	27,411	25,225
	1,269,680	1,335,118
Domestic production plus import of crude	1,240,767	1,297,351
Excess of demand over crude supply	28,913	37,767

[a]U. S. Bur. Mines, Monthly Petroleum Statements.

Demand for crude oil in both 1938 and 1939 as measured by runs-to-stills, exports, refinery fuel, and losses, slightly exceeded domestic production plus imports so that stocks of crude oil declined in both of these years.

STOCKS OF OIL

The market for crude oil and refined products is sensitive to changes in quantity of stocks on hand. Whenever there is a long continued accumulation of stocks of crude or refined products, prices tend to drop.

Accumulation of stocks may occur, either by production in excess of market demands, in which case there is likely to be an increase in all stocks of both crude and refined products; or there may also be, as more frequently occurs, an undue accumulation of stocks of one group of oils, while stocks of other groups remain at normal levels or may even be declining.

The types of stock changes that may occur are:

1) General increase or decrease in all stocks
2) Increase or decrease of stocks of one group of oils
3) Seasonal accumulation or deficiency in stocks
4) Regional accumulation or deficiency in stocks

Stocks of Crude Petroleum

Stocks of crude petroleum are located at refineries, in pipelines, on tank farms, and on leases. The distribution of these stocks on Dec. 31, 1938 and Dec. 31, 1939 is shown in table 25.

Table 25.—Stocks of Crude Oil in the United States and in Illinois, 1937, 1938 and 1939[a]
(Thousands of barrels)

Location	Dec. 31, 1937		Dec. 31, 1938		Dec. 31, 1939	
	United States	Illinois	United States	Illinois	United States	Illinois
At refineries	51,054	1,409	51,551	1,443	49,215	1,603
At tank farms and in pipelines	244,545	9,349	211,931	10,059	178,546	11,030
On leases	10,498	155	10,871	250	11,149	350
Total	306,084	10,913	274,353	11,752	238,910	12,983

[a]U. S. Bur. Mines, Monthly Petroleum Statements.

Crude oil stocks during the two years 1938 and 1939 decreased from 306,084,000 barrels on December 31, 1937 to 238,910,000 barrels on December 1, 1939, a decline of 67,174,000 barrels. This substantial decrease was brought about mainly by the shut-down of oil-production in the Mid Continent fields in the latter part of August, 1939. This decrease in stocks did not however, affect Illinois. On the contrary, stocks increased from 10,913,000 barrels on December 31, 1937 to 12,983,000 barrels on December 31, 1939. Stocks held by refineries in the United States generally declined also but stocks in refineries of the Central Refining district showed an increase over this period. In percentage, the stocks held in the Central Refining district rose from 8.3 on December 31, 1937 to 10.9 on December 31, 1939.

The change in stocks during 1938 and 1939 is shown in table 26.

TABLE 26.—STOCKS OF CRUDE PETROLEUM AT REFINERIES IN THE UNITED STATES AND IN THE CENTRAL REFINING DISTRICT AND IN ILLINOIS, 1938 AND 1939[a]

(In thousands of barrels)

	Total crude stocks in United States	Stocks of Crude at Refineries		Stocks of Crude in Illinois			
		United States	Central Refining District	At refineries	Tank farms and pipe-lines	On leases	Total
1938							
Jan.	306,195	52,909	4,386	1,519	9,646	175	11,340
Feb.	306,349	53,415	4,091	1,302	9,884	170	11,356
Mar.	309,403	53,460	3,969	1,261	9,597	140	10,998
Apr.	307,297	54,351	4,023	1,199	9,988	170	11,357
May	298,983	53,242	4,114	1,242	10,079	180	11,501
June.	292,634	52,928	4,381	1,447	9,894	170	11,511
July	288,664	51,574	4,112	1,225	10,315	185	11,725
Aug.	285,640	51,721	4,313	1,306	10,112	190	11,608
Sept.	282,756	50,892	4,098	1,282	10,159	190	11,631
Oct.	277,422	50,423	4,160	1,280	10,098	220	11,598
Nov.	273,155	50,129	4,343	1,228	9,813	270	11,311
Dec.	273,560	51,551	4,636	1,443	10,059	250	11,752
1939							
Jan.	272,346	52,384	4,914	1,631	10,229	270	12,130
Feb.	273,416	52,813	4,782	1,578	10,210	280	12,068
Mar.	276,355	52,766	4,626	1,281	10,347	290	11,918
Apr.	278,565	51,675	4,711	1,376	10,514	305	12,195
May	278,087	51,699	4,654	1,292	11,113	315	12,720
June	273,314	51,856	4,902	1,389	11,619	295	13,303
July	270,570	52,410	4,873	1,280	12,022	310	13,612
Aug.	238,479	48,082	5,115	1,234	12,467	325	14,026
Sept.	234,555	45,876	4,987	1,300	12,266	315	13,881
Oct.	230,854	46,673	4,832	1,496	11,988	340	13,824
Nov.	234,027	49,161	4,738	1,527	11,261	335	13,123
Dec.	238,910	49,215	5,363	1,603	11,030	350	12,983

[a]U. S. Bur. Mines, Monthly Petroleum Statements, 1938, 1939.

STOCKS OF REFINED PRODUCTS

The changes in stocks of principal refined products in the Central Refining district—gasoline, gas oil and distillate fuel, and residual fuel oil—are shown in table 27. The significant change is the decrease in residual fuel oil stocks in 1939 as compared with the previous year. Increased industrial activity in 1939 over the level of 1938 resulted in a heavy demand for this type of fuel and reduced stocks to more workable levels. Stocks of gas oil and distillate fuel in 1939 were somewhat below stocks of the previous year but were ample for the season's heating requirements.

Stocks of gasoline, both in the Central Refining district and in all districts in the United States, increased sharply in November and December. The problem of seasonal surpluses in stocks of refined products is tending to become more acute each year, largely as a result of the substantial gains each

year in the demand for heating oils. The highly seasonal nature of the demand for heating oils with the heaviest loads occurring in January and February, when gasoline demand is normally the lowest, results in an accumulation of gasoline stocks. As long as the consumption of heating oil represented a minor portion of refined products, the problem of seasonal accumulation of stocks was not serious. But since heating oils represent nearly 30 per cent of all residual oil consumption, and are exceeded in use only by gasoline, the problem of seasonal accumulation has become acute. The solution probably will be found in more flexibility of refinery operations with a regulation of refinery product output to correspond somewhat to seasonality of demand.

TABLE 27.—STOCKS OF REFINED PRODUCTS, 1938–1939[a]
(Thousands of barrels)

	CENTRAL REFINING DISTRICT			UNITED STATES
	Gasoline	Gas oil and distillate fuel	Residual fuel oil	Gasoline
1937				
Dec.	12,894	2,538	4,309	76,990
1938				
Jan.	14,996	2,260	4,561	85,873
Feb.	16,338	2,051	4,832	92,280
Mar.	15,972	1,992	5,127	92,320
Apr.	15,477	2,237	5,359	90,059
May	15,047	2,445	5,882	88,147
June	13,702	2,813	6,009	80,531
July	13,309	3,193	6,102	76,732
Aug.	11,500	3,624	5,834	70,962
Sept.	11,194	3,676	5,771	69,086
Oct.	11,374	4,061	5,511	69,277
Nov.	11,409	4,052	4,799	69,535
Dec.	12,119	3,427	4,025	71,680
1939				
Jan.	13,926	2,969	3,690	79,466
Feb.	15,490	2,473	3,245	85,491
Mar.	15,780	1,926	2,728	87,121
Apr.	15,466	2,053	2,779	87,531
May	14,001	2,185	2,849	84,200
June	13,453	2,724	2,863	80,288
July	13,248	3,232	2,926	77,843
Aug.	11,921	3,867	2,890	72,335
Sept.	11,778	3,917	2,843	70,992
Oct.	11,986	3,922	2,917	73,319
Nov.	12,412	3,911	3,043	76,790
Dec.	13,621	3,681	2,964	82,865

[a]U. S. Bur. Mines, Monthly Petroleum Statements.

Consumption of Oil

Although Illinois crude oil is shipped as far east as the Atlantic seaboard and north into Canada, the principal outlet for output from this State is among the refineries of the Central Refining district.[14] This district includes refineries in Illinois, Indiana, Kentucky, Michigan, and western Ohio, and refines approximately 18 per cent of the crude oil processed in the United States. Crude oil refined in this district is obtained from Texas, Oklahoma, Kansas, and New Mexico in the Mid Continent field and from Illinois, Indiana, Kentucky, Michigan, and possibly Ohio in the Eastern Interior fields. The bulk of the oil has been obtained from Mid Continent fields which supplied annually more than 80 per cent of the crude runs-to-stills in this district. The rise of production in Illinois since 1936 has effected a reduction in runs-to-stills from the Mid Continent fields from 85.6 per cent of the total runs in 1936 to 75.5 per cent in 1938 and a further reduction no doubt occurred in 1939. The statistical record of shipments of crude oil from Mid Continent fields to Central Refining district, production in local fields, and surplus of receipts and production over runs-to-stills is shown in table 28.

Table 28.—Crude Oil Runs-to-Stills to the Central Refining District, 1936-1938[a]
(Thousands of barrels)

From	1936	1937	1938
Texas	11,662	12,474	7,764
Oklahoma	86,000	85,795	80,688
Louisiana	266	255	217
Kansas	22,151	26,727	24,189
New Mexico	6,352	10,260	10,288
Total Mid Continent	126,431	135,511	123,146
Crude from other sources	21,333	28,732	39,994
Total runs-to-stills	147,764	164,243	163,140
Per cent contributed by Mid Continent	85.6	82.5	75.5

Crude Oil Produced in Central Refining District
(Thousands of barrels)

Illinois	4,445	7,499	23,929
Indiana	798	844	969
Kentucky	5,628	5,484	5,821
Michigan	11,828	16,628	19,211
Total produced	22,699	30,455	49,930
Used by Central Refining district	21,333	28,732	39,994
Surplus shipped into other districts or put in storage	1,366	1,723	9,936

[a]U. S. Bur. Mines, Minerals Year Book, 1938, p. 847 and 1939, p. 962.

An examination of table 28 shows that the shipments of crude oil from the Mid Continent to the Central Refining district dropped from 85.6 to

[14]Designated by the Bureau of Mines, as "Illinois-Indiana-Kentucky, etc. District."

75.5 per cent in two years as more crude oil became available in Illinois. Deducting the quantity shipped from the Mid Continent to Central district refineries from total runs-to-stills leaves a difference of 21 million barrels in 1936 increasing to 40 million barrels in 1938, obtained from oil producing districts in the Central Refining district. The amount absorbed by the Central refineries did not, however, keep pace with increased production so that the amount of surplus oil available for shipment to other refining districts or to storage increased from 1,366,000 barrels in 1936 to 9,936,000 barrels in 1938. The detailed data on sources of oil for the year 1939 are not yet available, but production data from important Mid Continent states in 1939 compared with the previous year indicate a further decline of shipments from Oklahoma and a further increase in the amount supplied by Illinois. Comparative production figures for the years 1938 and 1939 are shown in table 29.

TABLE 29.—PETROLEUM PRODUCTION IN ILLINOIS AND PRINCIPAL COMPETING STATES, 1938 AND 1939

(Thousands of barrels)

State	1938	1939	Increase or decrease
Oklahoma	174,994	160,072	−14,922
Kansas	60,064	60,723	+ 659
Illinois	24,075	94,302	+70,227

Table 30 gives the total quantity of oil received from all sources by refineries in the State of Illinois, the portion of this total received from other states, and the amount contributed by oil fields in Illinois.

In table 31 are shown for the year 1938 quantities of gasoline produced in refineries in those states comprising the Central Refining district and the amount consumed in those states in which refineries of this district have their principal outlet.

Table 32 gives details of the consumption of fuel oil, by uses, in Illinois.

TABLE 30.—CRUDE PETROLEUM CONSUMED BY REFINERIES IN ILLINOIS, 1935–1938[a]

(Thousands of barrels)

Year	Receipts from			Runs-to-stills	
	Illinois	Other States	Total	Total	Daily average
1935	3,536	31,826	35,362	34,469	98
1936	4,213	36,029	40,242	39,803	109
1937	5,117	40,470	45,587	45,626	125
1938	8,027	39,038	47,065	46,996	130

[a]U. S. Bur. Mines, Minerals Yearbooks 1936, 1937, 1938, and 1939.

TABLE 31.—PRODUCTION AND CONSUMPTION OF GASOLINE IN STATES SUPPLIED MAINLY BY REFINERIES IN THE CENTRAL REFINING DISTRICT, 1938[a]

(Thousands of barrels)

State	Production	Consumption
Illinois	28,309	31,782
Michigan	6,822	25,094
Indiana	40,737	15,046
Wisconsin		12,916
Minnesota		12,612
Iowa		12,574
Missouri and Kansas		14,373
North Dakota		3,031
South Dakota		3,080
Total	75,868	130,508

[a]U. S. Bur. Mines, Minerals Yearbook 1939, p. 984.

TABLE 32.—CONSUMPTION OF FUEL OIL IN ILLINOIS IN 1938, BY GRADES AND USES[a]

(Thousands of barrels)

Uses	Gas oil and distillate fuel	Diesel fuel	Residual fuel oil	Total
Industrial uses:				
Railroads	109	107	259	475
Vessels		36	232	268
Gas and electric power plants	40	55	111	206
Smelters, mines and manufacturing industries	361	121	2,454	2,936
U. S. Navy and Coast Guard	3	1	10	14
Oil Company use	74	29	1,661	1,764
Heating oils	9,440		4,143	13,583
Miscellaneous	107	109	103	319
State totals	10,134	458	8,973	19,565

[a]U. S. Bur. Mines, Mineral Market Reports No. M.M.S. 803, Feb. 15, 1940.

DEVELOPMENTS IN ILLINOIS IN 1939

REFINERIES

As a result of the discovery and development of new oil producing fields in Illinois, new refineries with an estimated crude oil capacity of 20,100 barrels have been erected or were in process of construction in 1939. The list of refineries is as follows:

Company	Location	Daily crude oil capacity in barrels
Northern Refining Co.	St. Elmo	750
Pana Refining Co	Pana	3,000
Cascade Refining Co.	Salem	2,500
Red River Refining Co.	Burnham	1,200

Company	Location	Daily crude oil capacity in barrels
Wabash Refining Co	Sandoval	750
Fairfield Refining Co	Merriam	2,500
Taxman Refining Co	Milan	1,500
B. F. Wireback	Colmar	200
A. Goodson	Sandoval	1,000
Lake Refining Co	Salem	2,000
Central Illinois Oil and Refining Co	Central City	2,000
H. S. and B. Refining Co	Mill Shoals	1,200
Transport Oil and Refining Co	Dupo	1,500
Total		20,100

New trunk pipelines constructed in Illinois during 1939 include the following:

Company	From	To	Length in miles within Illinois
Illana (gasoline)	Dupo	East Chicago, Ind.	255
Socony–Vacuum (crude)	Mitchell	Lima, Ohio	117
Texas Empire (crude)	Salem	Heyworth	223
Sohio Pipe Line (crude)	Salem	Stoy	71

Loops were added to several existing lines in order to increase their capacity.

NATURAL GAS

Natural gas consumption in the State of Illinois for the years 1936 to 1939 is presented in table 33. Gas consumption is stated in therms, a therm being equal to 100,000 B. t. u. One ton of coal with an average heat value of 12,500 B. t. u. per pound is therefore equal to 250 therms of natural gas. The coal equivalent value of natural gas sold in 1939 is therefore 838,650,000/250 or 3,354,600 tons of coal.

TABLE 33.—NATURAL GAS SALES IN ILLINOIS, 1936–1939[a]
(Thousands of therms)

	1936	1937	1938	1939
Total gas sales	786,373	833,600	758,763	838,650
Interdepartmental sales			143	160
Sales to other gas utilities	69,183	63,269	58,844	63,341
Total sales to ultimate consumers	717,190	770,331	699,776	775,149
Residential	255,391	255,657	251,614	259,451
Space heating	85,348	84,529	79,098	88,901
Other uses	170,043	171,128	170,550	172,516
Commercial	68,811	74,489	70,949	67,112
Industrial				
Non-interruptible	58,872	58,845	52,996	64,398
Interruptible	332,259	380,452	323,439	383,406
Street lighting	858	888	499	438
Other			278	344

[a]Illinois Gas Utilities, a comparative study of 1932 sales: Illinois Commerce Commission, Rates and Research Section, Research Bulletin 31, April 4, 1940. This comprises a detailed analysis of gas consumption and sales for 1939.

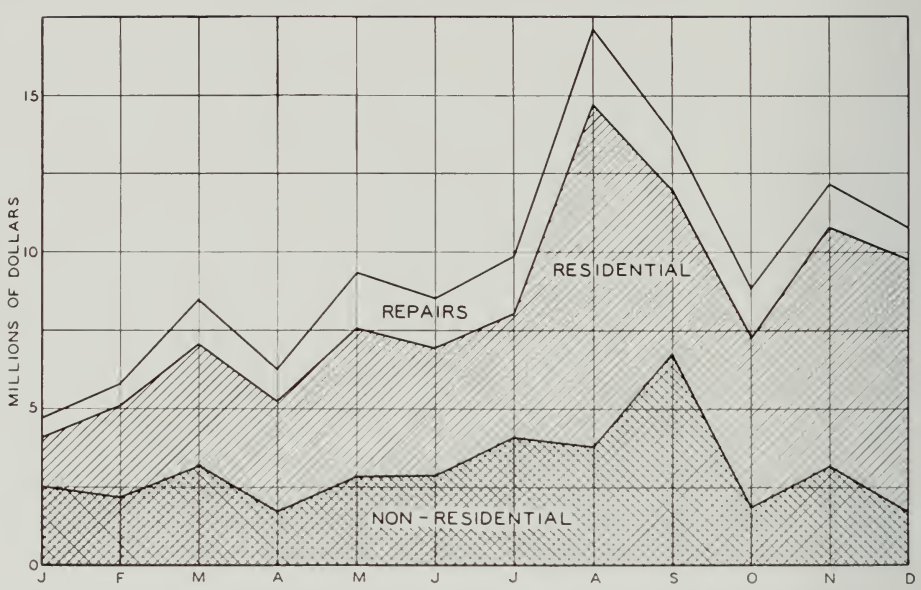


FIG. 5.—Value of Building Permits in Illinois Cities, by Months, 1939. (Building Construction: U. S. Bur. of Labor Statistics.)

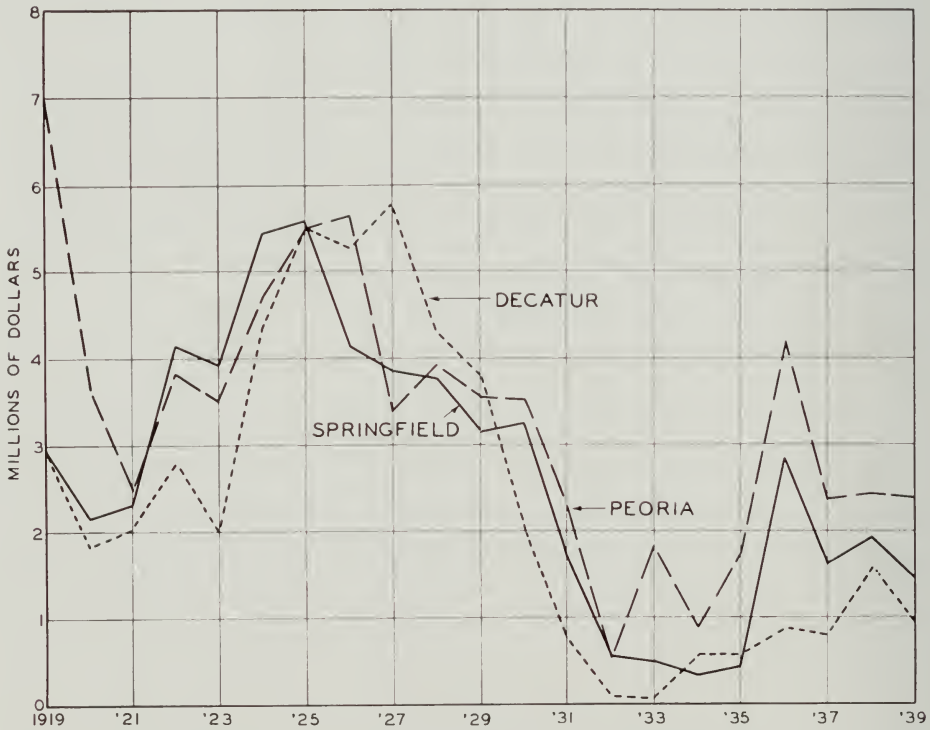


FIG. 6.—Value of Building Permits in Decatur, Peoria, and Springfield, 1919–1939. Commercial and Financial Chronicle, Jan. 19, 1940.

An examination of this table shows that the largest single outlet for natural gas, about 45 per cent, is for industrial interruptible service. This class of service is supplied at a low cost under conditions which permit the gas industry to begin or discontinue service or change the conditions of service on short notice. This type of service at low prices is advantageous to the gas industry in disposing of surplus gas when the domestic demand is low and can be used to advantage by consumers with alternative fuel sources that can be utilized upon short notice.

Under residential sales, approximately two-thirds of the gas purchased by consumers is used for lighting, cooking, water heating, refrigeration, and other domestic uses exclusive of space-heating. The amount used for space heating in 1939, or 88,901,000 therms, is equivalent to about 356,000 tons of coal.

BUILDING CONSTRUCTION

Building permits in 23 Illinois cities in 1938 and 1939 total 73 million and 79 million dollars respectively, distributed as follows:

	1938	1939
Non-residential construction	$29,231,500	29,481,468
Residential construction	30,037,838	37,802,948
Repairs	14,094,493	11,931,384
Total	$73,363,831	$79,215,800

Increase in building activity in 1939 over that in 1938 occurred only in residential construction. The cities of Chicago and Peoria showed substantial increases over 1938. The record of building permits for 23 principal cities in Illinois in 1939 is given in table 34, and shown in figure 5.

Trend of Building Activity and Related Industries

Building activity in the State, as indicated by the value of building permits, has fluctuated widely in the past two decades and has affected the outlook for mineral raw materials and mineral products used in the building industry. Peak production in building activity and in the output of structural mineral commodities was reached in the period 1920–1930, as shown by building permits issued in three representative cities (fig. 6). This period of unusual activity was the culmination of a combination of factors, principal among which were the increased activity following the stagnation in residential and industrial building during the World War, the high degree of industrial activity during this period, and the generally optimistic outlook regarding the future. Except for such materials as paving gravel and road metal and concrete, the output of building materials has fallen from the level of the late twenties. The outlook for these industries is, therefore, somewhat problematical and any improvement in the structural material industries is conditioned

TABLE 34.—VALUE OF BUILDING PERMITS ISSUED IN ILLINOIS CITIES IN 1938 AND 1939[a]

City	Total 1938	1939			
		Residential	Non-residential	Repairs	Total
Alton	$ 369,733	$ 180,893	$ 169,042	$ 145,768	$ 495,703
Aurora	669,805	317,539	53,182	244,780	615,501
Belleville	2,557,830	270,750	932,564	58,866	1,262,180
Berwyn	1,146,091	728,150	93,568	76,597	898,315
Bloomington	345,160	182,281	542,085	133,770	858,136
Chicago	29,350,354	24,616,956	20,376,521	7,118,830	52,112,307
Cicero	554,992	173,900	229,850	220,608	624,358
Danville	357,291	38,050	218,821	158,511	415,382
Decatur	1,576,691	500,690	242,797	173,203	916,690
East St. Louis	402,884	155,500	516,059	187,738	859,297
Elgin	676,686	272,969	34,981	245,417	553,367
Evanston	2,703,050	1,293,100	874,500	485,580	2,653,180
Granite City	75,984	59,300	24,060	6,250	89,610
Joliet	573,618	201,800	54,422	300,973	557,195
Maywood	135,766	104,680	35,470	70,445	210,595
Moline	1,233,747	826,772	257,975	346,018	1,430,765
Oak Park	715,475	471,350	137,795	174,365	783,510
Peoria	3,161,019	4,987,380	1,864,714	443,802	7,295,896
Quincy	214,574	131,825	43,050	35,587	210,462
Rockford	1,177,930	679,600	1,783,885	325,670	2,789,155
Rock Island	914,655	538,703	722,534	367,127	1,628,364
Springfield	1,688,994	830,186	226,378	306,653	1,363,215
Waukegan	785,279	240,200	47,215	214,656	502,071
10,000–25,000 (25)		7,346,729	4,278,867	1,849,316	13,474,912
5,000–10,000 (29)		6,616,721	1,950,060	1,012,846	9,579,627
2,500–5,000 (28)		3,383,402	613,640	643,553	4,640,595
1,000–2,500 (57)		3,471,678	636,630	289,891	4,398,199
Total		$58,621,104	$36,960,665	$15,636,820	$111,218,589

[a]U. S. Dept. of Labor, Monthly Bulletins on Building Construction, 1938 and 1939.

TABLE 35.—VALUE OF BUILDING PERMITS ISSUED IN ILLINOIS IN 1939, BY TYPES AND BY MONTHS[a]

Month	Residential	Non-residential	Repairs	Total
January	$ 1,707,312	$ 2,473,207	$ 720,332	$ 4,900,851
February	2,873,697	2,234,276	847,085	5,955,058
March	3,946,383	3,286,647	1,230,154	8,463,184
April	3,538,707	1,833,018	1,027,481	6,399,206
May	4,864,955	2,705,710	1,806,511	9,377,176
June	4,513,074	2,704,255	1,291,413	8,508,742
July	4,170,996	4,013,492	1,516,782	9,701,270
August	10,911,388	3,986,102	2,286,417	17,183,907
September	5,299,708	6,990,617	1,393,760	13,684,085
October	5,633,954	1,881,228	1,447,235	8,962,417
November	7,886,386	3,199,505	1,165,253	12,251,144
December	3,274,918	1,652,508	994,667	5,922,093
Total	$58,621,478	$36,960,565	$15,727,090	$111,309,133

[a]U. S. Dept. of Labor, Monthly Bulletins on Building Construction, 1938 and 1939.

upon favorable trends in building construction and in road making. Although construction of residences, office buildings, and industrial plants has lagged for several years and there is an apparent shortage of housing, a forecast of possible trends in building activity is difficult because of the complex factors that tend either to retard or to discourage building activity.

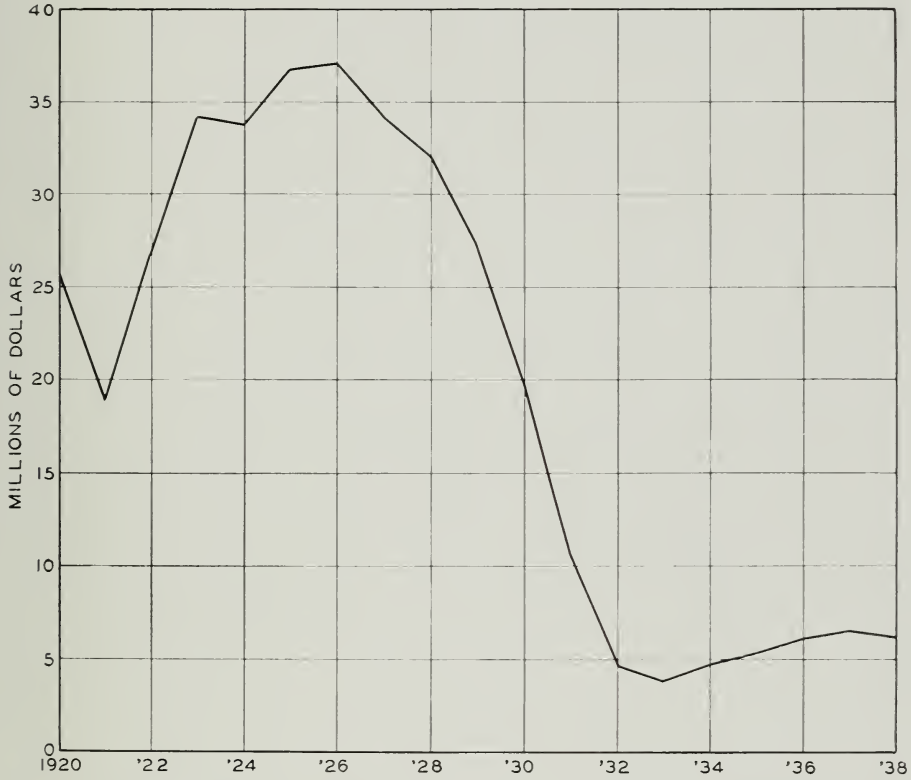


Fig. 7.—Value of Clay Production Other than Pottery and Refractories in Illinois, 1920–1938 (U. S. Bur. Min. Minerals Yearbooks.)

Figures 7, 8, and 9 reveal the trend of activity in building as shown by the consumption of raw construction materials from 1920 to 1938. The outstanding characteristic in the output of building materials is the substantial shift in 1937 and 1938 to noncommercial operation for supplies of aggregates. In 1938 the output of plants operated by states, counties, municipalities, and other government agencies comprised 42 per cent of the output of sand and gravel and 36 per cent of the output of limestone and road metal.

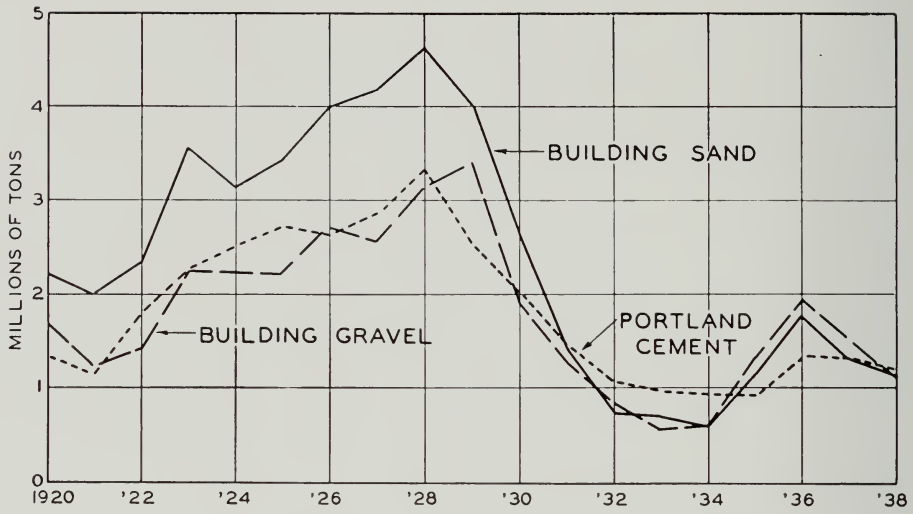


Fig. 8.—Building Sand, Building Gravel and Portland Cement Used in Illinois, 1920–1938. U. S. Bur. Min. Minerals Yearbook.

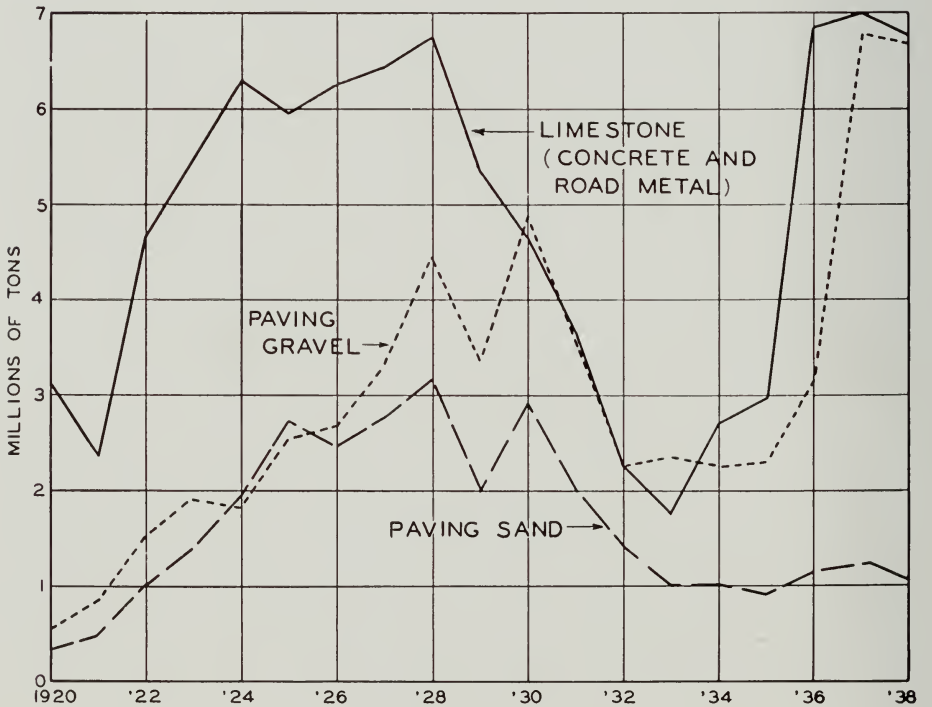


Fig. 9.—Paving Sand, Paving Gravel, and Limestone Used for Concrete and Road Metal in Illinois, 1920–1938. U. S. Bur. Min. Minerals Yearbook.

Clay Products

The value of clay products in 1939 amounted to $11,930,290 as compared with $9,450,784 in 1938 and $11,753,146 in 1937. The value of clay products manufactured in Illinois in the period 1935 to 1939 is shown in table 36.

Table 36.—Value of Clay Products, 1935–1939

Class	1935	1936	1937	1938	1939
Structural and refractory clay products	$4,555,624	$8,625,364	$8,711,012	$6,404,594	$8,884,100
Pottery	2,264,521	2,888,047	3,042,084	3,046,190	3,046,190[a]
Total	$6,820,145	$11,513,411	$11,753,096	$9,450,784	$11,930,290

[a]Estimated figures based on incomplete returns.

Production of clay products by classes in 1938 and 1939 is shown in table 37.

Table 37.—Production of Clay Products, by Classes, 1938 and 1939

Products	1938		1939	
	Quantity	Value	Quantity	Value
Common brick (M)	184,129	$1,867,869	286,162	$2,253,879
Face brick (M)	70,309	1,130,323	115,818	1,545,696
Hollow building tile (tons)	103,223	483,327	130,377	805,641
Drain tile (tons)	82,713	562,049	77,299	545,887
Fireclay products including refractory cement		771,656		363,311
All other clay products[a]		1,593,370		3,369,686
Pottery		3,046,190		3,046,190
Total value		$9,454,784		$11,930,290

[a]Includes silica brick, silica cement, floor brick, hollow brick, vitreous glazed brick, hadyite, industrial blocks, roofing granules, terra cotta, vitrified brick or block and sewer pipe.

TABLE 38.—SHIPMENTS OF CLAY PRODUCTS IN ILLINOIS, BY MONTHS AND BY CLASSES, IN 1939[a]

Month	No. of plants	Shipments		Stocks on hand at end of month Thousands
		Thousands	Value	
COMMON BRICK				
January	39	9,815	101,271	65,619
February	39	8,720	90,284	59,632
March	40	18,599	187,075	45,093
April	40	16,162	161,916	45,017
May	40	21,597	217,659	42,790
June	40	20,560	202,108	52,789
July	40	18,796	187,136	48,467
August	40	22,152	221,913	50,412
September	40	17,590	181,782	51,934
October	39	21,218	218,503	54,224
November	38	20,007	200,653	64,534
December	38	16,065	155,978	69,357
Total, 1939		211,281	2,126,278	
Total, 1938		158,777	1,630,980	
FACE BRICK				
January	18	3,656	63,208	27,663
February	19	2,508	45,023	31,758
March	19	6,805	120,091	30,913
April	19	6,888	123,544	32,072
May	19	10,238	176,899	29,559
June	19	8,557	150,524	28,263
July	19	7,234	127,107	28,802
August	19	7,478	131,562	29,682
September	19	7,050	117,084	24,793
October	18	7,154	118,303	24,320
November	18	5,928	97,968	24,722
December	18	3,812	60,525	25,593
Total, 1939		77,308	1,331,838	
Total, 1938		55,795	972,880	
HOLLOW BUILDING TILE				
January	19	5,937	33,213	40,434
February	20	4,960	26,987	40,151
March	20	9,138	51,017	38,334
April	20	8,290	45,495	35,294
May	20	8,740	49,495	35,967
June	20	8,853	48,390	39,444
July	20	9,179	48,118	40,343
August	20	7,955	43,128	42,715
September	19	7,187	38,804	43,582
October	18	7,429	41,072	44,414
November	18	7,998	44,518	43,385
December	18	7,311	40,183	40,007
Total, 1939		92,977	510,420	
Total, 1938		60,047	362,042	

[a]U. S. Bur. Census, Structural Clay Products, Monthly Bulletins, 1938 and 1939.

FLUORSPAR[15]

Greatly increased demand for fluorspar by all the chief consuming industries was reflected by the consumption of 176,800 short tons of fluorspar in 1939 compared with 115,100 tons in 1938. This improved demand resulted in the resumption of operations at some inactive mines and increases in operating schedules at many others. In consequence, domestic mine production and shipments were 75 and 127 per cent, respectively, higher than in 1938. In fact, so great was the demand for fluorspar in 1939 that shipments from domestic mines were the largest since 1920 and the fourth highest on record. Shipments from Arizona, Kentucky, and Nevada established all-time highs. However, shipments of fluorspar were considerably in excess of consumption and as a result consumers' stocks at the end of 1939 were abnormally high. Sales of imported fluorspar in the United States were 7 per cent less than in 1938.

Tables 39 and 40 show, for 1938 and 1939, details of the shipments of fluorspar by states, imports by countries, and consumption by industries.

TABLE 39.—FLUORSPAR SHIPPED FROM MINES IN THE UNITED STATES, 1938–1939, BY STATES

State	1938			1939		
	Short tons	Value		Short tons	Value	
		Total	Average		Total	Average
Illinois	35,368	$751,227	$21.24	75,257	$1,638,693	$21.77
Kentucky	34,803	678,094	19.48	89,563	1,773,063	19.80
Arizona	1,093			6,477	132,408	20.44
New Mexico	4,066	142,802	17.70			
Nevada	2,909			3,520	53,336	13.66
Utah	370			385		
Colorado	1,704	27,543	12.73	7,569	107,459	14.20
New Hampshire	90			.....	.....	.....
	80,403	$1,599,666	$19.90	182,771	$3,704,959	$20.27

[15]Data from U. S. Bur. Mines. Mineral Market Reports, M.M.S., No. 816, April 8, 1940.

TABLE 40.—FLUORSPAR IMPORTED INTO THE UNITED STATES, 1938–1939 BY COUNTRIES

Country	1938		1939	
	Short tons	Value	Short tons	Value
France	7,411	$67,097	13,094	$100,769
Germany	3,062	51,304	19	603
Mexico	85	1,263	465	7,418
Newfoundland	4,752	103,909	2,268	61,775
Norway			1	15
Spain	309	3,535	168	2,542
Tunisia	1,572	18,251	231	2,919
Union of South Africa	1,787	38,047		
United Kingdom	644	4,237	56	650
Total	19,622	$287,643	16,302	$176,691

TABLE 41.—FLUORSPAR CONSUMED AND IN STOCK IN THE UNITED STATES, 1938 AND 1939, BY INDUSTRIES, IN SHORT TONS

(Partly estimated by Bureau of Mines)

Industry	1938		1939	
	Consumption	Stocks at consumers' plants Dec. 31	Consumption	Stocks at consumers' plants Dec. 31
Basic open-hearth steel	73,600	55,000	116,200	69,900
Electric-furnace steel	4,000	1,000	7,600	1,400
Foundry	2,000	800	2,400	800
Ferro-alloys	800	400	1,100	400
Hydrofluoric acid	18,900	11,200	26,300	13,700
Enamel	4,000	900	21,400	3,100
Glass	10,500	1,600		
Miscellaneous	1,300	900	1,800	700
Total	115,100	71,800	176,800	90,000

AGRICULTURAL LIMESTONE

Returns from producers of agricultural limestone indicate that the farmers of Illinois applied 1,516,048 tons in 1939. Detailed statistics were received from Illinois producers and from producers in Indiana, Kentucky, Missouri, Iowa, and Wisconsin, who ship agricultural limestone into Illinois. Information was also received from farm advisers on estimated production of small quarries, production figures for which are otherwise unavailable.

TABLE 42.—CONSUMPTION OF AGRICULTURAL LIMESTONE IN ILLINOIS, BY COUNTIES, 1938 AND 1939

County	Tons Used		Arable land (acres) (1934 census figures)	Average Limestone Consumption in Pounds per Acre of Arable Land	
	1938	1939		1938	1939
Adams	16,483	28,054	256,222	128	218
Alexander	[a]	1,600	48,999	.....	66
Bond	11,358	9,569	132,099	172	144
Boone	[a]	8,106	115,787	.....	140
Brown	398	4,677	78,104	10	120
Bureau	13,120	20,000	359,529	73	111
Calhoun	[a]	5,750	68,901	.....	164
Carroll	2,089	15,000	153,278	27	196
Cass	[a]	5,538	144,961	.....	76
Champaign	20,357	23,103	510,585	78	90
Christian	15,542	14,669	338,156	92	86
Clark	19,650	46,915	151,845	240	600
Clay	1,706	5,500	151,435	22	72
Clinton	13,982	16,585	192,686	144	177
Coles	1,328	15,000	214,023	12	140
Cook	7,622	9,826	178,385	85	110
Crawford	2,510	8,240	124,307	40	132
Cumberland	6,576	10,526	119,122	110	176
DeKalb	8,000	10,895	307,266	52	71
DeWitt	10,757	10,120	182,562	118	110
Douglas	7,564	7,950	207,392	72	76
DuPage	6,711	5,541	106,526	126	104
Edgar	3,758	11,729	273,073	28	86
Edwards	8,204	6,050	85,356	192	140
Effingham	24,421	13,052	163,598	298	160
Fayette	10,001	14,000	228,559	88	123
Ford	21,264	21,490	247,539	172	173
Franklin	6,816	7,367	113,057	120	131
Fulton	5,049	11,890	290,102	34	82
Gallatin	2,564	4,773	104,998	48	91
Greene	16,045	16,125	178,198	180	181
Grundy	21,011	22,559	200,769	104	112
Hamilton	4,215	6,500	134,746	62	97
Hancock	4,550	8,161	274,919	33	59
Hardin	2,251	4,800	29,189	146	328
Henderson	[a]	13,035	130,350	.....	200
Henry	30,000	31,484	334,421	178	188
Iroquois	27,835	26,438	554,440	100	95
Jackson	7,901	13,300	172,337	90	154
Jasper	8,921	5,881	176,936	100	66

[a] Included under "Other Counties."

TABLE 42.—(Continued)

County	Tons Used		Arable land (acres) (1934 census figures)	Average Limestone Consumption in Pounds per Acre of Arable Land	
	1938	1939		1938	1939
Jefferson	14,822	13,500	177,301	166	153
Jersey	7,100	9,953	115,901	122	171
Jo Daviess	6,600	10,000	145,556	90	138
Johnson	1,164	7,010	72,686	32	193
Kane	7,293	14,224	223,860	65	127
Kankakee	20,683	25,153	309,935	133	162
Kendall	9,098	13,500	155,459	116	180
Knox	11,031	20,700	254,902	86	162
Lake	2,737	8,071	115,301	46	140
LaSalle	28,838	44,719	519,354	110	172
Lawrence	1,521	3,700	117,274	26	63
Lee	37,000	20,000	320,207	230	125
Livingston	49,022	66,014	540,819	180	244
Logan	15,339	12,300	300,583	100	83
McDonough	3,748	8,012	227,081	34	70
McHenry	2,593	16,500	218,840	24	150
McLean	58,120	66,716	581,994	198	228
Macon	8,206	11,480	278,949	58	82
Macoupin	5,140	18,250	292,187	35	124
Madison	10,702	30,320	267,693	80	226
Marion	15,463	8,505	185,766	166	91
Marshall	11,531	15,061	162,866	140	184
Mason	9,603	8,431	228,957	84	74
Massac	[a]	2,050	63,831	.....	64
Menard	2,787	5,528	134,833	40	83
Mercer	4,985	12,096	192,182	52	126
Monroe	21,017	9,375	149,508	280	123
Montgomery	13,601	10,290	269,517	100	74
Morgan	5,102	3,394	222,219	46	32
Moultrie	5,052	4,148	162,653	62	51
Ogle	35,000	20,000	319,048	220	135
Peoria	11,778	31,460	218,763	106	288
Perry	4,394	11,475	138,507	62	164
Piatt	8,917	10,662	220,133	90	97
Pike	[a]	20,000	237,252	.....	169
Pope	1,218	4,800	66,401	36	143
Pulaski	[a]	1,600	66,790	.....	48
Putnam	9,336	9,843	59,339	320	334
Randolph	17,577	11,952	204,931	170	117
Richland	6,500	6,558	133,173	96	99

[a] Included under "Other Counties".

TABLE 42.—(Concluded)

County	Tons Used		Arable land (acres) (1934 census figures)	Average Limestone Consumption in Pounds per Acre of Arable Land	
	1938	1939		1938	1939
Rock Island	8,286	11,150	133,212	124	168
St. Clair	27,374	31,501	267,433	200	232
Saline	5,762	9,514	120,108	96	158
Sangamon	14,598	8,310	377,487	77	44
Schuyler	[a]	6,000	130,779	.....	91
Scott	6,561	8,560	90,704	138	188
Shelby	14,971	12,375	297,999	100	86
Stark	9,711	5,475	122,206	160	91
Stephenson	35,000	20,000	210,552	332	190
Tazewell	15,215	12,930	284,658	106	91
Union	8,290	7,345	108,386	152	136
Vermilion	16,687	18,000	399,851	84	90
Wabash	3,294	310	92,213	70	7
Warren	13,272	20,000	215,866	154	185
Washington	24,553	24,000	216,960	226	221
Wayne	3,489	3,063	208,166	32	30
White	8,154	6,746	190,289	86	71
Whiteside	5,348	16,000	282,383	38	114
Will	11,454	9,974	370,187	60	54
Williamson	3,285	2,854	105,094	62	54
Winnebago	25,000	25,000	182,962	262	262
Woodford	18,254	18,141	233,462	156	155
Trucked, county unknown	38,862	89,292	.....	.....	.....
Other counties	2,489	.....	.....	.....	.....
Total	1,174,986	1,516,048			

[a] Included under "Other Counties".

PORTLAND CEMENT[16]

Portland cement shipments from mills in Illinois in 1939 increased 444,000 barrels over those of 1938. Shipments and value for these years are as follows:

Year	Shipments in barrels	Value
1938	4,358,000	$6,051,000
1939	4,802,000	7,099,000

Cement sold in Illinois in 1939 amounted to 7,665,332 barrels as compared with 6,432,231 barrels in 1938, an increase of 1,233,101 barrels.

[16] U. S. Bur. Mines, Monthly Cement Statements, No. C.P. 224, Feb. 26, 1940 and C.P. 224, Supplement A., March 8, 1940.

APPENDIX

Table 1 shows the all-rail distribution of coal in market districts extending westward from middle Ohio and including the states of Indiana, Michigan, Illinois, Wisconsin, Minnesota, and Iowa. This is the general area in which the industry of Illinois ships coal in greater or lesser quantities.

Table 2 shows freight rates from a representative low-volatile coal field (Pocahontas) to market destinations in the Illinois coal market area, compared with freight rates from Illinois fields.

Table 3 describes the size groups of coal in District No. 10 as defined by the U. S. Bituminous Coal Commission in its schedule of proposed minimum prices.

Table 1.—All-rail Shipments of Bituminous Coal by Districts of Origin Nos. 1–15, into Market Areas 15, 19–157, in 1937, Exclusive of Railroad Fuel[a]

Into Market Area / From Producing District	Ohio		Michigan		Indiana						Chicago	Indiana		Illinois					St. Louis	Illinois	Wisconsin		Michigan	Minnesota	St. Paul
	15	19	20	21	22	23	24	25	26	28	29	30	32	35	36	37	38	39	40	41	42	43	44	45	46
1	2,288	876	390	4,610	50	264	120			347	19,431	229	502	607		80	2,137	123	3,271	1,006	855	2,536	317	1,983	2,089
2	57,020	4,528	11,684	93,605	160	1,582		42		234	1,568	160					373			47		97	277		
3	55,614	52,440	13,954	187,844	3,356	11,803	2,056	546	301	3,053	43,062	12,288	280				4,594		1,790	130,227	2,637	4,003	401	44	990
4	805,017	158,126	83,489	923,953	24,540	49,694	1,015	507		144	409	6,912	171				7,043			2,703	51	1,186	7,613		385
5			79,546	21,037																					
6	3,232	142	399	209																					
7L[b]	617,532	1,321,393	145,161	3,058,974	175,702	120,527	43,780	35,720	3,903	402,251	4,810,044	2,475,301	26,490	24,708		251	21,995	96	134,303	1,010,449	423,744	214,975	33,725	10,642	98,442
7H[c]	7,601	7,107	1,485	13,548	4,903	6,924	2,323	604	216	36,807	4,423	5,485	888							60	173			392	
8L[b]	37,647	77,819	21,921	93,591	3,654	11,006	2,716	1,815	1,270	5,206	138,054	16,655	567	90			1,685		1,428	14,529	10,423	5,553	572		7,039
8H[c]	2,197,266	3,929,033	1,096,183	7,836,603	553,007	1,209,322	264,155	92,907	104,669	645,329	3,098,029	2,957,559	126,898	6,423	82	5,279	343,984	3,421	225,263	523,863	60,381	62,302	26,634	18,269	67,053
9				180		1,372	1,288			1,974	390,551	7,440	26,440	22,660		556	39,763	50	69,904	205,579	172,075	27,368	139	18,074	42,536
10	784	328	10,536	34,732	10,151	120,662	1,587	52		5,665	7,492,846	472,820	33,483	838,040	10,548	15,968	3,730,058	124,494	4,367,216	3,570,542	1,100,093	247,202	2,065	173,508	391,259
11	191		5,212	21,841	88,501	491,790	107,801	64,601	26,497	1,369,306	2,147,254	1,134,727	669,315	84,433	1,344	9,288	146,175	154	49,127	608,846	399,727	78,034	1,256	12,841	63,445
12																						184		795	4,102
13											156		48	154					102						
14																	52		5,801	91				10,730	82,449
15																	2,145							767	501
Total	3,784,192	5,551,792	1,469,960	12,290,727	864,024	2,024,946	426,841	196,794	136,856	2,470,316	18,145,827	7,089,576	885,082	977,115	11,974	31,422	4,300,004	128,338	4,858,205	6,067,942	2,170,159	643,440	72,999	248,045	760,290

Into Market Area / From Producing District	Iowa																				
	47	48	49	50	52	53	54	55	56	57	58	59	60	61	62	63	64	65	66	67	68
1	412	41	90	467	55	173	31	222	258		881	54			31	316	30	173	182		34
2																					
3	529	89	1,368	6,026	40	105		873							47			383			
4	2,294	32	48	378				249							78			101			
5																					
6																					
7L[b]	2,109	896	6,185	52,281	25	615	88	2,982	277	34		48			438	47	35				115
7H[c]				666																	
8L[b]		47	575	3,304		247		45								533		47			
8H[c]	191,313	24,891	148,256	329,157	10,901	30,300	4,469	130,021	1,034	4,050	1,232	16,216	10,321	587	18,860	15,549	6,675	5,405	8,187	1,016	4,070
9	25,016	2,096	24,547	81,586	14,364	26,151	9,089	15,589	1,801	1,286	5,442	2,119	7,556		3,671	4,389	3,610	869	2,184		5,755
10	98,029	28,017	150,363	741,916	65,918	153,066	92,643	129,732	22,978	16,086	42,398	45,603	4,551	213	15,655	12,611	7,958	7,653	73,483	802	80,324
11	9,223	4,684	65,770	181,957	7,835	6,148		15,715	859	386	436	442	137		5,181	9,149	1,021	5,320	1,818	52	47
12	79,187	11,990	109,139	100,054		32,756	325	212,597	10,575	3,966	7,404	30,019	4,650	384	3,561	193,943	3,686	33,980	45,123	790	818
13																					
14	7,426		656	869		49		9,225	75,698	5,312	269,787	3,595			154	95	33	31	8,287		502
15	2,513	45	26	5,824		266	146	6,024	75,631	5,598	569,590	3,600				8,380	81	92	10,194		
Total	418,051	72,828	507,023	1,504,485	99,138	249,876	106,791	523,274	189,111	36,718	897,170	101,696	27,215	1,184	47,676	245,012	23,129	54,054	149,458	2,660	91,665

Into Market Area / From Producing District	Missouri								Grand Total (From Districts to all Market Areas)
	69	70	71	72	73	74	75	153-157	
1	288	310	70	430	195	673	1,029	141	50,697
2									171,377
3									540,743
4									2,076,138
5									100,583
6									3,982
7L[b]	108			156	47	27		239	15,276,860
7H[c]									93,605
8L[b]									458,038
8H[c]	293	1,864	144	462		477		2,949	26,422,613
9	1,908	1,389	1,365	975	20,388	5,227	50	132,550	1,428,921
10	54,224	173,655	119,158	137,386	347,422	24,339	1,723	52,081	25,454,626
11		3,814		354			156		7,902,210
12	1,066	140							891,234
13		110			3,022	1,714		169,852	175,158
14	53,118	7,958		6,544	451	48,953	373,501	81,210	1,052,577
15	126,447	226,739	4,451	52,344		167,476	1,404,998	1,841	2,675,719
Total	237,452	415,979	125,188	198,651	371,525	248,886	1,781,457	440,863	84,775,081

[a] U. S. Bituminous Coal Division, Interim Summaries by Market Areas, Exhibit No. 502, Aug. 31, 1939.
[b] Low-volatile.
[c] High-volatile.

TABLE 2.—FREIGHT RATES FROM A REPRESENTATIVE LOW-VOLATILE COAL FIELD (POCAHONTAS)

RATES FROM ILLINOIS

(Cents

Destination	Market Area	Pocahontas	Franklin County Coal Corp. (Royalton)	Difference	Springfield	Difference
			On 6″x3″ egg			
Chicago, Ill.	29	339	205	134	175	164
Logansport, Ind.	30	339	212	127	174	165
New Albany, Ind.	31	266	..	266	..	266
Bloomfield, Ind.	32	312	174	138	..	312
Terre Haute, Ind.	33	295	174	121	..	295
Evansville, Ind.	34	337	146	191	..	337
St. Elmo, Ill.	35	382	136	246	..	382
Effingham, Ill.	36	375	..	375	..	375
Paris, Ill.	37	339	..	339	166	173
Galesburg, Ill.	38	411	200	211	..	411
Whitehall, Ill.	39	397	174	223	..	397
St. Louis, Mo.	40	337	140	197	115	222
Rockford, Ill.	41	427	210	217	180	247
Madison, Wis.	42	502	290	212	261	242
Eau Claire, Wis.	43	550	370	180	340	210
Ishpeming, Mich.	44	532	440	92	..	532
St. Cloud, Mich.	45	702	416	286	386	416
Minneapolis and St. Paul, Minn.	46	570	390	180	360	210
Ft. Dodge, Ia.	47	550	354	196	319	231
Clarion, Ia.	48	550	345	205	310	240
Montezuma, Ia.	49	520	286	234	251	269
Cedar Rapids, Ia.	50	500	274	226	239	261
Muscatine, Ia.	52	445	210	235	170	275
Burlington, Ia.	53	440	190	250	150	290
Houghton, Ia.	54	520	228	292	193	327
Audubon, Ia.	55	583	368	215	338	245
Sioux City, Ia.	56	630	401	229	371	259
Onawa, Ia.	57	630	401	229	371	259
Omaha, Neb.	58	..	..	..	..	..
Winterset, Ia.	59	550	325	225	305	245
Polk City, Ia.	60	520	346	174	316	204
Elkhart, Ia.	61	520	334	186	299	221
Baxter, Ia.	62	520	345	175	310	210
Des Moines, Ia.	63	520	290	230	270	250
Newton, Ia.	64	520	298	222	263	257
Knoxville, Ia.	65	520	266	254	246	274
Centerville, Ia.	66	505	266	239	246	259
New Sharon, Ia.	67	..	274	..	239	..
Keokuk, Ia.	68	440	190	250	150	290
			3″ and over			
St. Joseph, Mo.	69	583	319	264	279	304
Mexico, Mo.	70	..	209	..	186½	..
Hannibal, Mo.	71	..	200	..	160	..
Sedalia, Mo.	72	558	267	291	244½	313½
Bonne Terre, Mo.	73	410	170	240	..	410
Springfield, Mo.	74	..	288	..	No rate	..
Greater Kansas City, Mo.	75	..	319	..	230	..

TO MARKET DESTINATIONS IN THE ILLINOIS COAL MARKET AREA, COMPARED WITH FREIGHT FIELDS, 1937[a]

per ton)

Belleville	Difference	Fulton-Peoria (Piatt)	Difference	Northern Illinois (Wilmington)	Difference	Danville	Difference
			On 6″x3″ egg				
195	144	165	174	120	219	145	194
..	339	..	339	..	339	..	..
..	266	..	266	..	266	..	..
174	138	..	312	..	312	..	..
..	295	..	295	..	295	..	..
..	337	..	337	..	337	..	..
136	246	..	382	..	382	143	239
150	225	..	375	..	375	..	..
..	339	..	339	..	339	90	249
190	221	73	338	165	246	..	..
161	236	146	251	..	397	..	..
115	222	..	337	..	337	160	177
200	227	150	277	105	322	180	347
280	222	229	373	190	312	..	..
360	190	300	250	300	250	360	190
430	102	370	162	370	162	402	130
406	392	346	356	..	702	..	..
380	190	305	265	305	265	360	210
339	211	286	264	291	259	..	..
330	220	275	275	280	270	330	220
271	249	216	304	221	299	..	..
259	241	204	296	209	291	259	241
200	245	123	322	170	275	212	233
165	275	115	325	120	320	187	254
213	307	158	362	163	357	..	..
358	225	308	275	313	270	323	260
391	239	341	289	346	284	403	227
391	239	341	289	346	284	403	227
..	..	..	..	..	..	..	..
310	240	275	275	285	265	327	223
336	184	286	234	291	229	348	172
319	201	264	256	269	251	336	184
330	190	275	245	280	240	..	..
275	245	240	280	250	270	290	230
283	237	228	292	233	287	298	222
251	269	216	304	226	294	266	254
251	254	216	249	226	259	266	239
259	..	259	..	209	..	274	..
165	275	115	325	120	320	175	265
			3″ and over				
279	304	..	583	..	583	335	248
186½	..	..	..	..	..	..	..
170	..	185	..	..	..	..	..
244½	313½	..	558	..	558	..	..
170	240	..	410	..	410	..	..
170	..	..	..	..	..	..	..
279	..	..	..	..	..	..	..

TABLE 3.—DESCRIPTION OF SIZE GROUPS OF COAL IN DISTRICT NO. 10[1]

Size Group Number	Raw or Mechanically Cleaned Sizes
1	All lump coal larger than 4 inches; also all egg coal with a bottom size larger than 4 inches.
2	All lump coal 4 inches and smaller, but larger than 3 inches; also all egg coal with a bottom size larger than 3 inches but not larger than 4 inches.
3	All lump coal 3 inches and smaller, but larger than 2 inches; also all egg coal with a bottom size larger than 2 inches but not larger than 3 inches.
4	All lump coal 2 inches and smaller, but larger than 1½ inch; also all egg coal with a bottom size larger than 1½ inch and not larger than 2 inches and with a top size larger than 4 inches.
5	All double screened coal with a bottom size larger than 1½ inch but not larger than 2 inches and a top size larger than 2 inches but not larger than 4 inches.
6	All lump coal 1½ inch or smaller; all double screened coal with a top size larger than 2 inches and a bottom size not larger than 1½ inch.
7	Straight mine run, no fines removed. Mine run, modified by the removal of any intermediate size or sizes, no fines removed. All resultants larger than 2 inches, no fines removed.
8	All double screened coals with a top size not larger than 2 inches but larger than 1½ inch, and a bottom size larger than ⅜ inch.
	Raw Sizes
9	All double screened coals *not* mechanically cleaned with a top size not larger than 2 inches but larger than 1½ inch, and a bottom size not larger than ⅜ inch but larger than 3/32 inch or 10-mesh.
10	All double screened coals *not* mechanically cleaned with a top size not larger than 1½ inch but larger than ¾ inch, and a bottom size larger than ⅜ inch.
11	All double screened coals *not* mechanically cleaned with a top size not larger than 1½ inch but larger than ¾ inch, and a bottom size not larger than ⅜ inch but larger than 10-mesh or 3/32 inch.
12	All double screened coal *not* mechanically cleaned with a top size ¾ inch and smaller, and a bottom size larger than 3/32 inch or 10-mesh.
13	All screenings *not* mechanically cleaned having a top size 2 inches and smaller, but larger than 1½ inch, no fines removed.
14	All screenings *not* mechanically cleaned having a top size 1½ inch and smaller but larger than ⅜ inch, no fines removed.
15	All screenings *not* mechanically cleaned having a top size ⅜ inch and smaller but larger than 10-mesh or 3/32 inch, no fines removed.
16	(Dust) All screenings *not* mechanically cleaned having a top size 10-mesh or 3/32 inch and smaller, no fines removed.

[1]Schedule of proposed coordinated minimum prices for District No. 10. U. S. Bituminous Coal Commission, June 23, 1939.

TABLE 3.—Continued

Size Group Number	Washed or Air-Cleaned Sizes
17	All double screened coals mechanically cleaned with a top size not larger than 2 inches but larger than 1½ inch, and a bottom size not larger than ⅜ inch, but larger than 3/32 inch or 10-mesh.
18	All double screened coals mechanically cleaned with a top size not larger than 1½ inch but larger than ¾ inch, and a bottom size larger than ⅜ inch.
19	All double screened coals mechanically cleaned with a top size not larger than 1½ inch but larger than ¾ inch, and a bottom size not larger than ⅜ inch, but larger than 3/32 inch or 10-mesh.
20	All double screened coals mechanically cleaned with a top size ¾ inch and smaller, and a bottom size larger than 3/32 inch or 10-mesh.
21	All double screened coals mechanically cleaned with a top size not larger than 1½ inch but larger than ¼ inch and a bottom size not larger than 10-mesh.
22	All screenings, mechanically cleaned, having a top size 2 inches and smaller but larger than 1½ inch, and a bottom size for wet cleaning 1 millimeter or equivalent, and for air cleaning shall contain at least 10 per cent that will pass a 10-mesh screen.
23	All screenings, mechanically cleaned, having a top size 1½ inch and smaller but larger than ⅜ inch, and a bottom size for wet cleaning 1 millimeter or equivalent, and for air cleaning shall contain at least 10 per cent that will pass through a 10-mesh screen.
24	All screenings, mechanically cleaned, having a top size ⅜ inch and smaller, and a bottom size for wet cleaning 1 millimeter or equivalent, and for air cleaning shall contain at least 10 per cent that will pass through a 10-mesh screen.
	Dry Dedusted Sizes
25	Dry dedusted screenings having a top size 2 inches and smaller but larger than 1½ inch. Fines are defined as the resultant coal passing through the dedusting screen used to dedust and in no case shall the dedusting screen exceed ⅜ inch. Not more than 50 per cent of the fines may be removed by dedusting screens. However, standard mechanical dedusting equipment may use not larger than 8-mesh screens to remove the fines with no limit to percentage of fines removed.
26	Dry dedusted screenings having a top size 1½ inch and smaller but larger than ⅜ inch. Not more than 50 per cent of the fines may be removed by dedusting screens. However, standard mechanical dedusting equipment may use not larger than 8-mesh screens to remove the fines with no limit to percentage of fines removed.
27	(10-mesh special stoker) Dry dedusted screenings having a top size ⅜ inch and smaller. Standard mechanical dedusting equipment may use not larger than 8-mesh but larger than 48-mesh screens to remove the fines.
28	(Carbon) Dry dedusted screenings having a top size ⅜ inch and smaller. Standard mechanical dedusting equipment may use not larger than 28-mesh screens to remove the fines.
29–33	Sizes embraced in these size groups are not produced in District No. 10.
34	Picking table refuse not passed through a breaker.